PEGSON METROTRAK M.A.

PEGSON METROTRAK H.A.

USER MANUAL

OPERATION
SET-UP
TRANSPORT

SERVICING
LUBRICATION
WEAR PARTS

⚠ SAFETY

This manual contains safety information which the operator should read and follow. Failure to do this will increase the risk of injury or may result in death. This user manual is part of the plant and must always be available wherever the plant is in use and kept with it at all times.

041010

AX893-901-8 EN -01f

EN - English

◄ EN - To display the language required, select the language bookmark icon.

◄ FR - Pour afficher la langue exigée, choisir l’icône de signet de langue.

◄ ES - Para demostrar el idioma necesario, seleccione el icono de señalador de idioma.

◄ DE - Um die erforderliche Sprache darzustellen, wählen Sie das Sprachenlesezeichenabbild aus.

◄ IT - Per mostrare la lingua richiesta, di scegliere l’icona di segnalibro di lingua.

◄ NL - Om de noodzakelijke taal te tonen, selecteer de taalbladwijzerbeeld.

◄ PT - Para exibir a linguagem necessária, seleciona o marcador de linguagem de ícone de livro.

◄ BR PT - Para exibir a linguagem necessária, seleciona o marcador de linguagem de ícone de livro.

◄ RU - Чтобы показывать требуемый язык, выберите языковое изображение закладки.

◄ CS - Vyberte ikonu záložky jazyka, který chcete zobrazit.

◄ HU - A kívánt nyelv megjelenítéséhez kattintson a nyelv könyvjelzőikonjára.

◄ PL - Aby wyświetlić żądany język, wybierz ikonę zakładki języka.

◄ RO - Pentru a afișa limba dorită, selectați pictograma limbii corespunzătoare.

EN - English

01 EN Introduction

Introduction to User Manual

1. This instruction manual contains important information on how to operate the plant safely, properly and most efficiently.
2. To be assured of faultless operation we would ask you to carefully read the manual and give the required time and attention to essential maintenance, cleaning and inspection.
3. Observing these instructions and exercising common sense helps to avoid danger, to reduce repair costs and down time and to increase the reliability and life of the plant. Failure to do so may invalidate any warranties in force.
4. This manual is part of the plant and must always be available wherever the plant is in use and kept with it at all times.
5. These operating instructions must be read and applied by any person in charge of and/or working on the plant such as:-

Operation

6. Includes manoeuvring, setting up, operation during the course of work, evacuation of production material and waste, care and disposal of fuels and consumable items, etc.

Servicing

7. Servicing, lubrication, inspection and adjustments.

Transport

8. Follow all applicable laws and safety regulations for accident prevention and environmental protection.

Safety Warnings and Symbols

9. The following signs and designations are used in the manual to designate instructions of particular importance.

 02

This is the safety alert symbol. When you see this symbol on the plant or in this manual be alert to the potential for personal injury or equipment damage. Follow the recommended precautions and safe operating practices.

⚠ CAUTION

Indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury. It may also be used to alert against unsafe working practices.

⚠ DANGER

Indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury.

NOTICE

Indicates a statement of company policy as the message relates directly or indirectly to the safety of personnel and protection of property.

⚠ WARNING

Indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.

Designated Use of Plant

10. Pegson tracked crusher plants are designed exclusively as a self-contained mobile unit for crushing materials in a wide range of quarry applications, within the parameters set out and described within this manual. It is also possible for some models to be used in demolition and recycling applications.

11. A Pegson tracked crusher plant is intended to be used only in above ground open air environments. Use of the plant in any other way is contrary to its intended use.

⚠ WARNING

This plant is designed for stone crushing applications. It is vitally important that large pieces of steel or similar uncrushable objects are not allowed to enter the crushing chamber as severe damage and injury may occur. The plant is not designed to accept large pieces of steel or other uncrushable objects such as bucket teeth from a loading shovel.

12. Operating the plant outside it's recommended range of applications and operating parameters shown will result in a loss of guarantee and the manufacturer/supplier cannot be held liable for any damage resulting from such use. The risk of such misuse lies entirely with the user.

NOTICE

If you have any doubts about any aspect of the plant's capability or servicing procedures, you must consult your local Powerscreen® dealer or Powerscreen® Technical Support.

Additional Information and Features

PEGSON PLANTS CAN VARY IN SPECIFICATION.

The plant may have several changes such as:

OPTIONAL EQUIPMENT
SPECIAL FEATURES
ADDITIONAL FEATURES OR INFORMATION
MODIFICATIONS

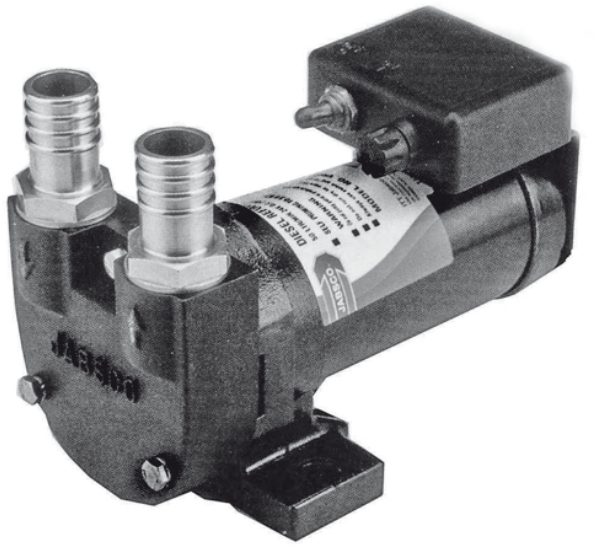
THESE CHANGES MAY AFFECT THE INFORMATION GIVEN IN THIS MANUAL.
CHECK FOR ANY ADDENDUM OR BULLETIN WHICH IS INCLUDED IN THIS SECTION TO SUPPORT THESE VARIATIONS.
TAKE NOTE OF ANY VARIATIONS AS THEY MAY AFFECT PROCEDURES.

Addendum to User Manual
Operating Instructions

AM0009 Fuel Transfer Pumps [EN]

Introduction and Specification

1. This is available as originally fitted equipment installed at the time of plant manufacture.
2. The pump is for the purpose of transferring diesel fuel from a fuel container positioned at ground level alongside the plant fuel tank.
3. The pump is permanently mounted in a suitable position on the plant in the vicinity of the engine and is electrically driven from a 24v DC supply. The unit is fitted with an integral on/off switch.
4. Also supplied as part of the kit are lengths of plain hose 25mm (1in) bore for suction [with strainer] and delivery.
5. The 2573-7002 pump is suitable for equipment with diesel fuel tanks between 200 and 500 litres (53 and 132 US gallons). Flow is 50 l/min (13.2 US gal/min)
6. The 2573-7014 pump is suitable for equipment with diesel fuel tanks between 500 and 1000 litres (132 and 264 US gallons). Flow is 100 l/min (26.4 US gal/min)
7. Duty is continuous up to 40°C (104°F) ambient, self priming dry up to 3m (9.8 ft) head. Maximum head 10m (32.8 ft).



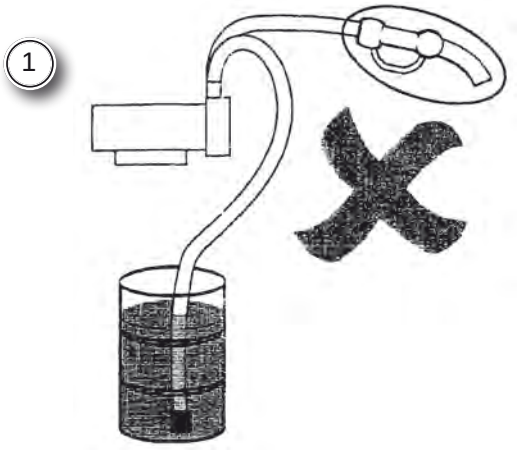
⚠ DANGER

Do not use the fuel transfer pump for any other purpose than filling the diesel fuel tank on a Pegson plant.

Observe the safety instructions in these instructions plus safety and information given in the re-fuelling section of the plant user manual.

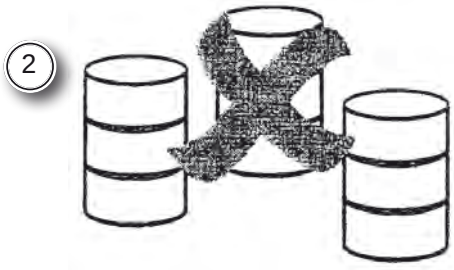
SAFETY

1. DO NOT USE A TRIGGER NOZZLE FOR DELIVERY INTO THE FUEL TANK.



2. FLASHPOINT BELOW 37°C (99°F)

PETROL
GASOLINE
BENZINE

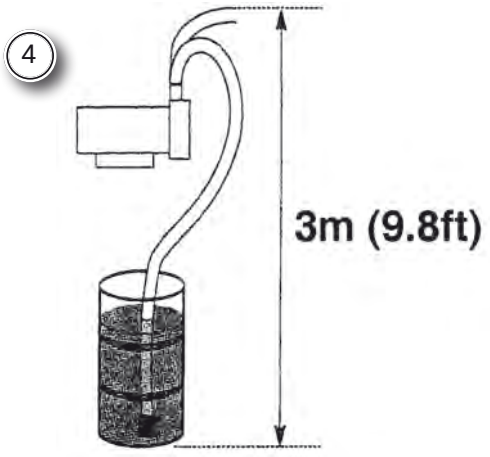


3. FLASHPOINT ABOVE 37°C (99°F)

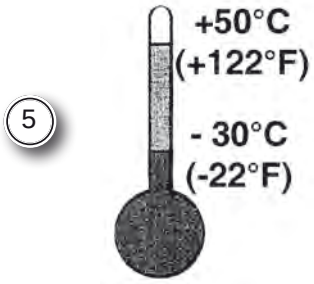
DIESEL
GAS OIL
FUEL OIL

INSTALLATION & USE

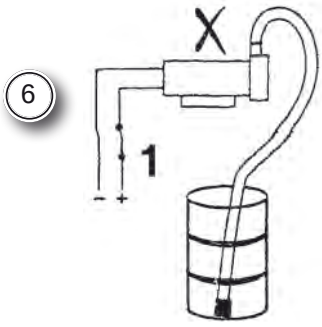
4. CONTINUOUS DUTY AT 40°C (104°F)



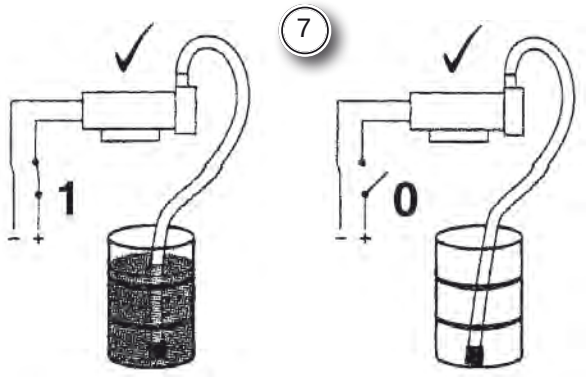
5. TEMPERATURE RANGE



6. DO NOT ALLOW THE PUMP TO RUN DRY.



7. SWITCH OFF IMMEDIATELY DELIVERY OF THE FUEL IS COMPLETED.



Top Up With Fuel

NOTICE

Do Not fill the tank to overflow or full capacity.

Allow room for expansion and wipe up spilt fuel immediately.

1. Check the fuel gauge on the plant.
2. Observe all safety warnings.
3. Follow the instructions to re-fuel in the plant user manual
4. Connect both hoses to the pump and insert the suction hose into the fuel supply.
5. Remove the filler cap and insert the delivery hose into the plant fuel tank.
6. Operate the switch on the pump to top up the fuel tank. Use only in accordance with the introduction and specification.
7. When re-fuelling is complete, switch off the pump and stow the hoses.
8. Replace the filler cap.
9. If the plant is to be operated, refer to engine starting in the user manual to start up.
10. If the plant is not being used, set the isolation switch to the ‘0’ position.

⚠ DANGER

Diesel fuel is highly flammable and is an explosion/burns hazard. NEVER remove the filler cap or re-fuel, with the engine running.

NEVER add petrol, gasoline or any other fuel mixes to diesel because of increased fire or explosion risks.

DO NOT smoke while refilling or carrying out maintenance on the fuel system. DO NOT carry out maintenance on the fuel system near naked lights or sources of sparks, such as welding equipment.

Addendum to User Manual

AM0010 M.C.S. Belt Weigher BW100 [EN]

ROUTINE CALIBRATION SIMPLIFIED GUIDE

1. The Following procedures may be performed on a routine basis as required.
2. Important: The belt should be stopped and secured prior to suspending or removing the test weights for span calibration.
3. Safe working practice should be adopted at all times.

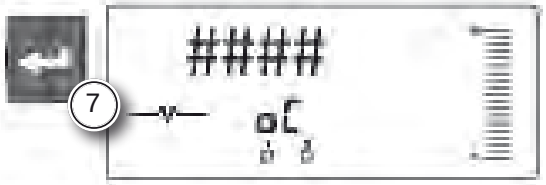
Zero Calibration

4. With belt running empty at normal speed with test weights removed.

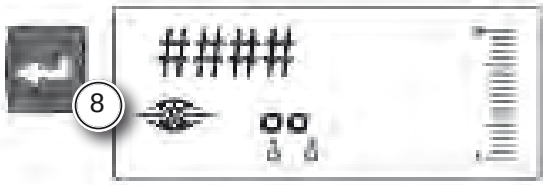
5. ZERO CALIBRATION REQUIRED.

6. INITIAL ZERO COUNT.

7. FREQUENCY COUNT DISPLAYED DURING CALIBRATION.

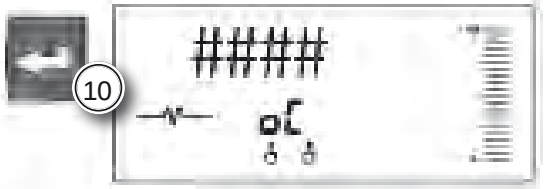


8. DEVIATION.



9. NEW ZERO COUNT CALIBRATION COMPLETE - RETURN TO RUN MODE.

10. PRESS TO RETURN TO RUN MODE.

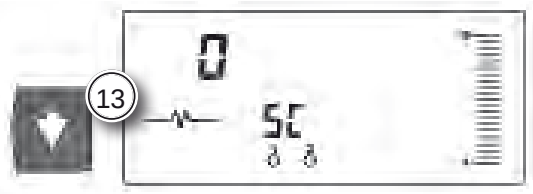


11. SPAN REQUIRED.

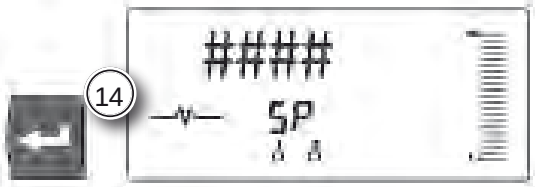
Span Calibration

12. With belt running empty at normal speed with test weights applied.

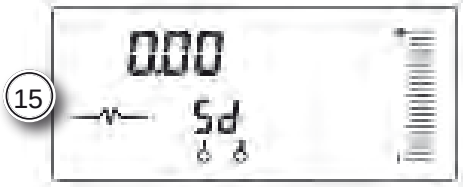
13. INITIAL SPAN COUNT.



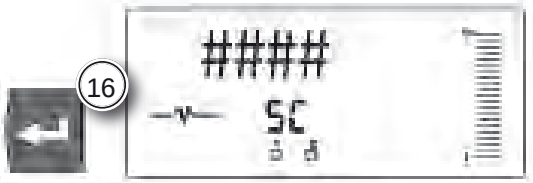
14. FREQUENCY COUNT DISPLAYED DURING CALIBRATION.



15. DEVIATION.



16. NEW SPAN COUNT.



17. CALIBRATION COMPLETE - REMOVE TEST WEIGHTS

18. PRESS TO RETURN TO RUN MODE.

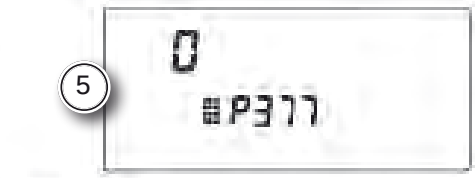
INITIAL CALIBRATION SIMPLIFIED GUIDE

1. The Following procedures may be performed when messages E3 and E4 are displayed during routine calibration.
2. The E3 and E4 messages indicate a mechanical problem: i.e. Bearing failure on weigh idler and also idlers adjacent to the weigher, new belt fitted, build up on the weigher etc.
3. Important: The belt should be stopped and secured prior to suspending or removing the test weights for span calibration. Safe working practice should be adopted at all times.

Zero Calibration

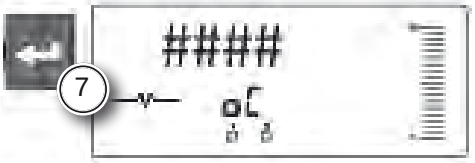
4. With belt running empty at normal speed with test weights removed.

5. SELECT PARAMETER P377.

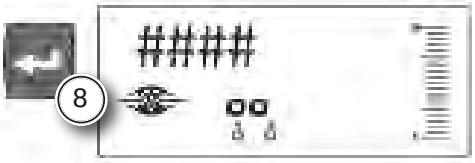


6. INVOKE INITIAL ZERO ENTER " 1 ".

7. CURRENT ZERO COUNT.

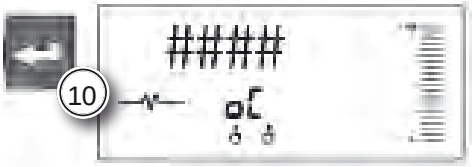


8. ZERO CALCULATION FREQUENCY COUNT DISPLAYED.



9. ZERO DEVIATION.

10. ZERO DEVIATION ACCEPTED - INITIAL ZERO COUNT= ####.



11. PROCEED WITH SPAN CALIBRATION OR RETURN TO RUN MODE.

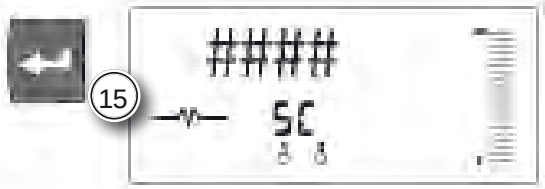
Span Calibration

12. With belt running empty at normal speed with test weights applied.

13. SELECT P388 .

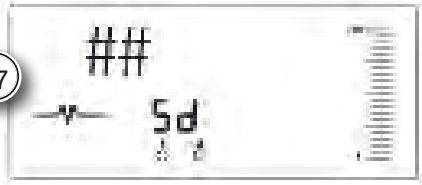
14. INVOKE INITIAL SPAN ENTER " 1 ".

15. CURRENT SPAN COUNT= ####.

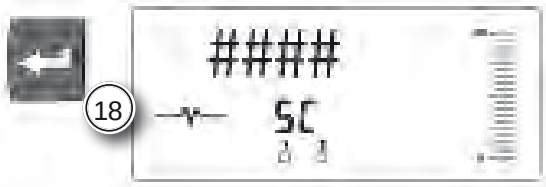


16. SPAN CALCULATION - FREQUENCY COUNT DISPLAYED.

17. SPAN DEVIATION= ##.



18. ZERO DEVIATION ACCEPTED - INITIAL ZERO COUNT= ####.



19. RETURN TO RUN MODE.

BW100 Belt Weigher [if fitted]

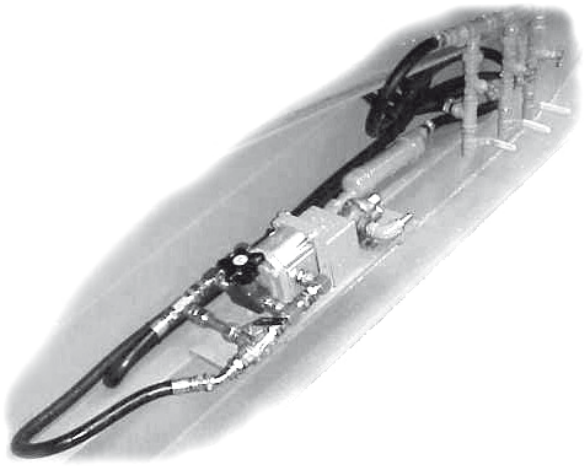
Addendum To User Manual

AM0011 Water Pump [EN]

2575-2002 for dust suppression system

2575-2009 for dust suppression system plus additional requirements

TYPICAL INSTALLATION SHOWN



Optional Water Pump [If fitted]

1. This option is available as originally fitted equipment installed at the time of plant manufacture.
2. Two models are available:

   2575-2002: 25 l/min nominal (6.6 US gall/min) to supply the plant spray bars only.

   2575-2009: 65 l/min nominal (17 US gall/min) to supply the plant spray bars, plus additional capacity for requirements additional to the plant.

3. The pump is to provide a pressurised supply of clean water to the dust suppression spray nozzles included on plants. For details of clean water requirements for the dust suppression system, refer to the plant user manual.
4. The pump is permanently mounted in a suitable position on the plant near to the water system inlet and is driven by the plant hydraulic system.

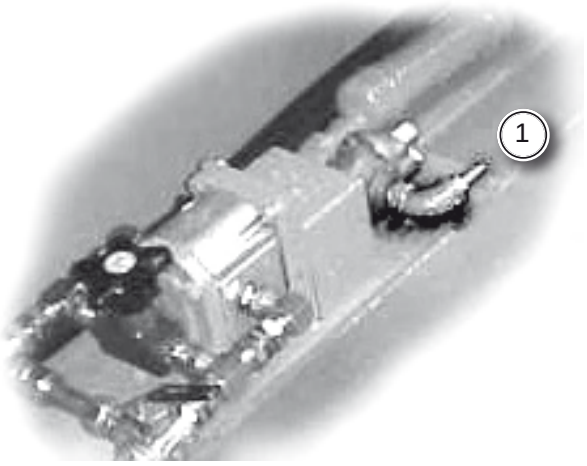
⚠ DANGER

Refer to Safety Notices Section for relevent warning and procedure

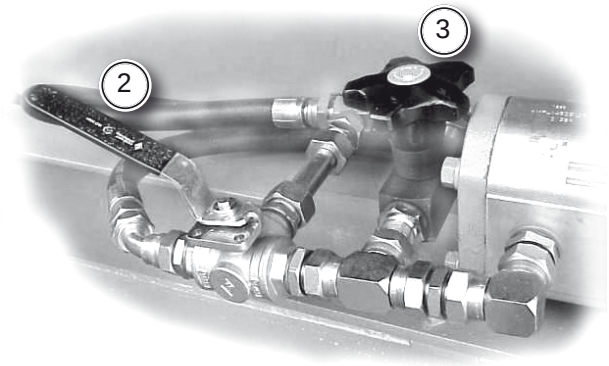
SKIN INJECTION HAZARD

Controls

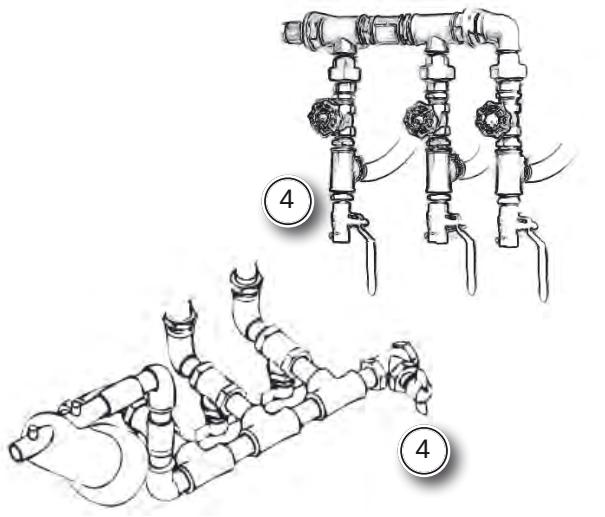
1. The water inlet is a hose connector for the provision of suitable supply piping from a clean water container close to the plant.



2. Initial on and off control of the pump is by means of a three position valve lever.
3. Whilst valve lever 2 is in the on position the screw type valve can be used to regulate the supply to the plant water system.



4. If the higher capacity pump is fitted, the supply to the additional equipment can be taken off one of the drain valves.



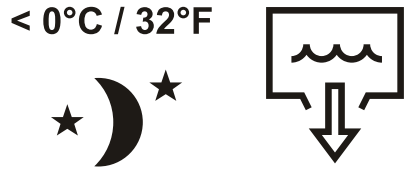
Servicing

5. No specific maintenance is required for the pump unit except to check for hydraulic oil leaks when carrying out the normal plant checks.

Protection from Freezing

6. Precautions must be taken in cold weather to ensure water does not freeze within the system, by opening the water manifold drain valves and draining the system.

7. Detach the pump water inlet feed pipe and any additional equipment supply also.



NOTICE

Drain water from system when not in use, if there is a possibility of freezing.

Pump Hydraulic and Water Circuits

A. Hydraulic Fluid

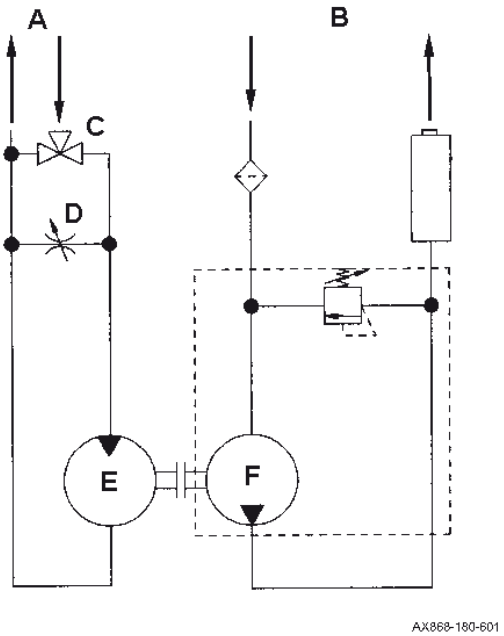
B. Water

C. Three Position Valve

D. Flow Control Valve

E. Hydraulic Motor

F. Water Pump



AX868-180-601

Water Pump [if fitted]

02 EN Safety Notices and Hazards

Safety Notices

⚠ DANGER

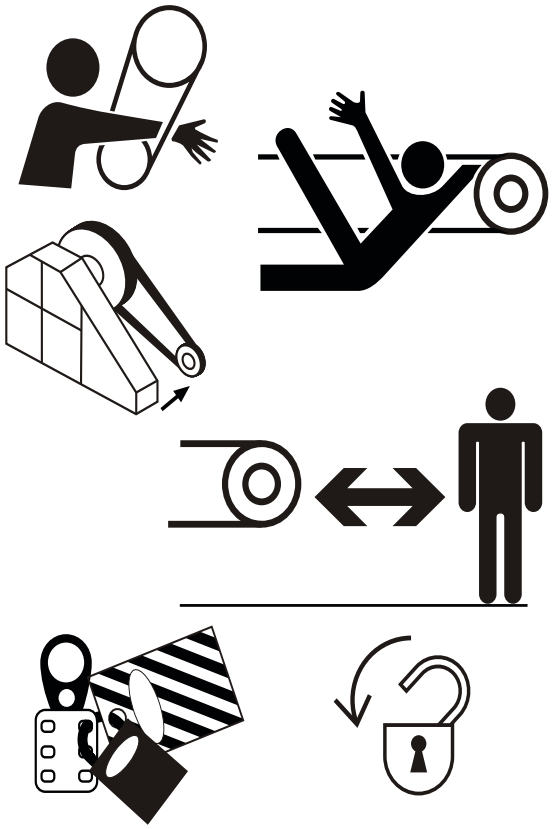
ENTANGLEMENT HAZARD

In-running nip points can cause serious injury or even death.

DO NOT reach into an unguarded plant.

Your arm could be pulled in and amputated.

SWITCH OFF, LOCKOUT and TAGOUT machine before opening or removing guards.



⚠ DANGER

SKIN INJECTION HAZARD

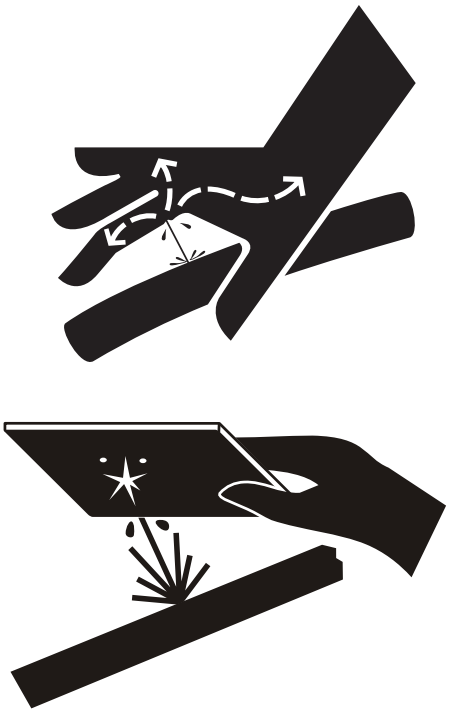
Hydraulic fluid under high pressure can penetrate the skin causing serious injury.

Always relieve the pressure from the hydraulic system before carrying out any kind of maintenance or adjustment.

ALWAYS use a piece of cardboard to check for leaks. DO NOT use your hand.

If fluid is injected under the skin, it must be surgically removed or gangrene may result.

Get medical help immediately.



⚠ WARNING

PERSONAL PROTECTIVE EQUIPMENT

Loose or baggy clothing can be caught in running machinery.

ALWAYS wear correctly fitting [E.N./A.N.S.I. approved] personal protective equipment.

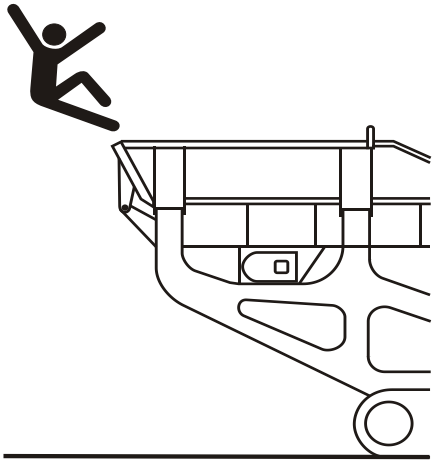
Personal Protective Equipment includes Hard Hat, Safety Glasses, Hearing Protection, Dust Mask, Close Fitting Overalls, Steel Toed Boots, Industrial Gloves and High Visibility Vest.

⚠ WARNING

FALLING HAZARD

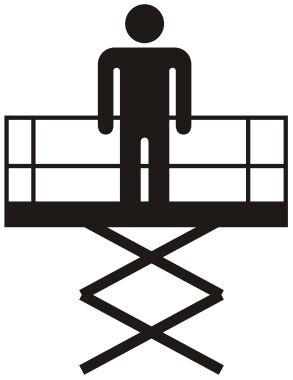
Falling from and/or onto a plant can cause serious injury or even death.

DO NOT climb onto the plant whilst it is in operation.



ALWAYS use the walkways/platforms provided or a safe and secure platform approved by the local regional safety enforcing authority.

ALWAYS use a suitable lifting platform before attempting any maintenance work above 2m (6ft 6in).

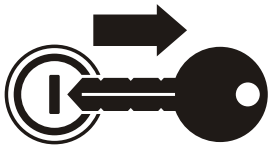


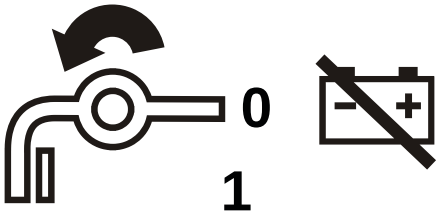
⚠ WARNING

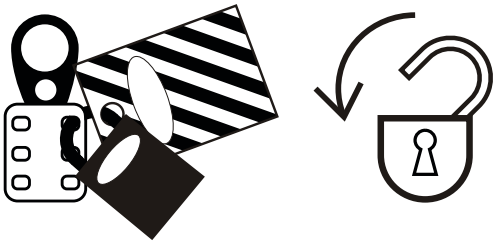
LOCKOUT PROCEDURE

When carrying out maintenance or adjustment to the plant the following lockout procedure must be followed.

1. Switch off engine or motor.
2. Remove ignition or isolation key.
3. Keep keys on person during lockout.
4. Turn the battery or isolation switch to '0' when the plant is not being used, especially when mobile plant is being transported.
5. Place appropriate maintenance warning signs [i.e. TAGOUT]
6. NEVER work alone.







⚠ WARNING

NOISE LEVEL HEARING HAZARD EXCEEDS 90 dB [A]

May cause loss or degradation of hearing over a period of time.

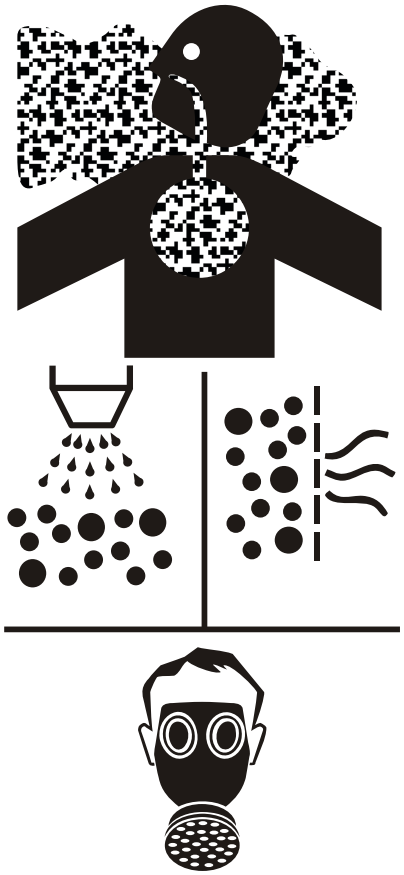
Wear proper hearing personal protective equipment.

⚠ WARNING

DUST GENERATION INHALATION HAZARD

Death, serious injury or delayed lung disease may result from breathing dusts that are generated when certain hazardous materials are crushed, screened or conveyed with this equipment.

When dusts are generated by the operation of this equipment, use approved respiratory protection, as required by National, Federal, State and Local safety and health regulations.



⚠ DANGER

FLYING MATERIAL HAZARD ON MAINTENANCE PLATFORMS

Platforms are for maintenance access only.

There is a danger of being hit by flying material.

Do not use platforms when the plant is working.

Safety Information

Important Safety Notices

1. The environment in which the plant will operate contains inherent risks to health and safety which the operator must take steps to guard against. Dangers from overhead conveyor discharges, overspill material, vehicle movements, etcetera, as well as other site related hazards must be anticipated. Avoid these by carrying out risk assessments before the plant is put into operation to ensure appropriate exclusion zone measures are put in place and site personnel safety awareness training has been undertaken.
2. Follow all applicable safety regulations and recommendations in this manual as appropriate to your plant and the situation/conditions prevailing at the time.
3. Read this manual carefully to learn how to operate and service your plant correctly. Failure to do so could result in personal injury or equipment damage.
4. Federal, State, National and Local laws and safety regulations must be complied with at all times to prevent possible danger to persons or property from accidents or harmful exposure.
5. See also the separate Operation and Maintenance Manual provided for the diesel engine when fitted and supplied as a complete Pegson plant. In particular read and observe the instructions within the Safety Section of the engine manual.
6. This safety section covers a wide variety hazardous situations, but not necessarily limited to those described, which may or may not apply to any specific plant use or installation. They are given for general guidance only to assist the operator in setting up and maintaining an appropriate regime for the protection of health and safety.
7. Where the crusher is supplied for incorporation into plant/equipment designed, supplied and located by others, or as a replacement crusher only, Powerscreen® cannot be aware of particular hazards that may be present or might occur and therefore accept no liability for addressing or resolving these issues.

8. For further U.K. information also refer to:

http://www.hse.gov.uk/quarries/crushing.htm

Organisation Measures

9. Ascertain from the appropriate Authority and observe all statutory and any other regulations that may apply to the planned location before operating the plant.

10. Loose or baggy clothing can get caught in running machinery.

11. Where possible when working close to engines or machinery, only do so when they are stopped. If this is not practical, remember to keep tools, test equipment and all other parts of your body well away from the moving parts.

12. For reasons of safety, long hair must be tied back or otherwise secured, garments must be close fitting and no jewellery such as rings may be worn. Injury may result from being caught up in the machinery or from rings catching on moving parts.

13. Always wear correctly fitting [EN/A.N.S.I. approved] protective clothing.

14. Protective clothing includes hard hat, safety glasses, ear protection, dust mask, close fitting overalls, steel toed boots and a high visibility vest.

15. You can be injured if you do not obey the safety instructions as indicated on warning signs.

16. Observe all safety instructions and warnings attached to the plant.

17. Keep warnings and instruction labels clean to ensure safety instructions and warnings attached to the plant are always complete and perfectly legible.

18. Replace unreadable or missing labels with new ones before operating the plant. Make sure replacement parts include warning or instruction labels where necessary.

19. Understand service procedure before doing work. Keep areas clean and dry.

20. Never lubricate, clean, service or adjust machinery while it is moving. Keep hands, feet and clothing clear of power driven parts and in running nip-points. Disengage all power and operate controls to relieve pressure. Stop the engine. Implement lockout procedure. Allow the machinery to cool.

21. Keep all parts in good condition. Ensure that all parts are properly installed. Fix damage immediately. Replace worn and broken parts. Remove any build up of grease, oil and debris.

22. Disconnect battery ground cable before making adjustments on electrical systems or welding on plant.

23. Never make any modifications, additions or conversions, which might affect safety without the supplier’s approval.

24. In the event of safety relevant modifications or changes in the behaviour of the plant during operation, stop the plant and lock out immediately and report the malfunction to the competent authority/person.

Selection and Qualification of Personnel - Basic Responsibilities

1. Trained, reliable and authorised personnel only must execute any work on and/or with the plant. Statutory minimum age limits must be observed.
2. Work on electrical system and equipment of the plant must be carried out only by a skilled electrician or by instructed persons under the supervision and guidance of a skilled electrician and in accordance with electrical engineering rules and regulations.
3. Only personnel with special knowledge and experience of hydraulic equipment must carry out work on the hydraulic system.

Safety Instructions Governing Specific Operational Phases

Standard Operation

4. Take the necessary precautions to ensure that the plant is used only when in a safe and reliable state.

5. Operate the plant only for it's designed purpose and only if all guarding, protective and safety orientated devices, emergency shut-off equipment, sound proofing elements and exhausts, are in all place and fully functional.

6. Before starting the engine ensure it is safe to do so.

7. In the event of material blockage, any malfunction or operational difficulty, stop the plant immediately and lockout. Have any defects rectified immediately.

8. In-running nip points on moving machinery can cause serious injury or even death.

9. Do not reach into unguarded machinery. Your arm could be pulled in and amputated.

10. Switch off and lockout the plant before removing, for adjustment purposes, any safety devices or guarding.

11. NEVER leave the plant unattended whilst it is in operation.

Special Work In Conjunction with Utilisation of the Plant

Maintenance and Repairs During Operation; Disposal of Parts and Consumable items

12. Observe the adjusting, maintenance and intervals set out in these operating instructions, except where:

    Warning horn/light/gauge or indicator calls for immediate action.

    Adverse conditions necessitate more frequent servicing.

13. Observe information on the replacement of parts and equipment. These activities may be executed by skilled personnel only.

14. When the plant is completely shutdown for maintenance and repair work, it must be secured against inadvertent starting by:

    Switching off the engine and remove the ignition key.

    Implementing the lockout procedure.

    Attaching warning signs to the plant in appropriate positions.

15. Carry out maintenance and repair work only if the plant is positioned on stable and level ground and has been secured against inadvertent movement and buckling.
16. Never allow unqualified or untrained personnel to attempt to remove or replace any part of the plant, or anyone to remove large or heavy components without adequate lifting equipment.
17. To avoid the risk of accidents, individual parts and large assemblies being moved for replacement purposes should be carefully attached to lifting equipment and secured. Use only suitable and technically adequate lifting equipment.
18. Never work or stand under suspended loads.
19. Keep away from the feed hopper. There is risk of serious injury or death due to the loading of material.
20. Keep away from underneath the product conveyor and the conveyor discharge area. There is risk of serious injury or death due to the material falling from the conveyor.
21. Falling from and/or onto a Pegson plant can cause injury or even death.
22. Do not climb on the plant. Never use plant parts as a climbing aid.
23. Beware of moving haulage and loading equipment in the vicinity of the plant.
24. For carrying out overhead assembly work always use specially designed or otherwise safety-oriented ladders and working platforms.
25. Always use any walkway/platforms provided or a safe and secure platform approved by the regional safety enforcing authority.
26. Always use an EN/A.N.S.I. approved safety harness when reaching any points 2m (7ft) or more above the ground level.
27. Keep all handles, steps, handrails, platforms, landing and ladders free from dirt, oil, snow and ice.
28. The fastening of loads and instructing of crane operators should be entrusted to experienced persons only. The person marshalling and giving the instructions must be within sight or sound of the operator.
29. After cleaning, examine all fuel, lubricant and hydraulic fluid lines for leaks, loose connections, chafe marks and damage. Any defects found must be rectified without delay.
30. Any safety devices removed for setting up, maintenance or repair purposes must be refitted and checked immediately upon completion of the maintenance and repair work to ensure full working order.
31. Improperly disposing of waste can threaten the environment and ecology. Potentially harmful waste used with Pegson equipment includes such items as oil, fuel, coolant, filters and batteries, etc.
32. Use leak proof trays and sealed containers for drained fluids. Do not use food or beverage containers that may mislead someone into drinking from them.
33. Do not pour waste onto the ground, down a drain or into any water source.
34. Ensure that all consumable items and replaced parts are disposed of safely and with minimum environmental impact.

35. Always ensure that any safety fitment such as locking wedges, securing chains, bars or struts are utilised as indicated in these operating instructions.
36. Particularly make sure that any part of the plant raised for any reason is prevented from falling by securing in a safe reliable manner.
37. Never work under unsupported equipment.
38. Never work alone.
39. Diesel fuel is highly flammable.
40. Never remove the filler cap, or refuel, with the engine running.
41. Never add gasoline or any other fuels mixed to diesel because of increased fire or explosion risks.
42. Do not smoke or carry out maintenance on the fuel system near naked lights or sources of sparks, such as welding equipment.
43. Use of non-approved structures like walkways or platforms etc. in the vicinity of a Pegson plant is very dangerous and could lead to serious injury or even death through falling and/or entanglement with the plant.
44. Do not use any unauthorised structures.

Warning of Special Dangers

Electric Energy

1. Use only original fuses with the specified current rating. Switch off the plant immediately if trouble occurs in the electrical system.
2. Plants with high voltage electrical equipment must be suitably earth bonded by a qualified electrician prior to activating the main isolator switch.
3. When working with the plant, maintain a safe distance from overhead electric lines. If work is to be carried out close to overhead lines, the working equipment must be kept well away from them. Check out the prescribed safety distances.
4. If your plant comes into contact with a live wire:

   Warn others against approaching and touching the plant.

   Have the live wire de-energised.
5. Work on the electrical system or equipment may only be carried out by a skilled and qualified electrician or by specially instructed personnel under the control and supervision of such an electrician and in accordance with applicable electrical engineering rules.
6. If provided for in the regulations, the power supply to parts of plants and plants, on which inspection, maintenance and repair work is to be carried out, must be cut off. Before starting any work, check the de-energised parts for presence of power and ground or short circuit them in addition to insulating adjacent live parts and elements.
7. The electrical equipment of the plant is to be inspected and checked at regular intervals. Defects such as loose connections or scorched or otherwise damaged cables must be rectified immediately.
8. Necessary work on live parts and elements must be carried out only in the presence of a second person, who can cut off the power supply in the case of danger by actuating the emergency shut off or main power switch. Secure the working area with a red and white safety chain and a warning sign. Use insulated tools only.
9. Before starting work on high voltage assemblies and after cutting out the power supply, the feeder cable must be grounded and components such as capacitors short-circuited with a grounding rod.
10. Tracked plants are wired with negative earth. Always observe correct polarity.
11. Always disconnect battery leads before carrying out any maintenance to the electrical system.
12. If welding is to be carried out on the plant it is essential that the power pack is isolated, refer to servicing safety & precautions.
13. The batteries contain sulphuric acid, an electrolyte which can cause severe burns and produce explosive gases.
14. Avoid contact with the skin, eyes or clothing.

Gas, Dust, Steam, Smoke and Noise

15. Always operate internal combustion engines and fuel operated heating systems only out of doors or in a well-ventilated area.
16. Before starting the plant in enclosed areas, make sure that there is sufficient ventilation.
17. Observe the regulations in force at the respective site.
18. Dust found on the plant or produced during work on the plant should be removed by extraction, not blowing.
19. Dust waste should be dampened, placed in a sealed container and marked, to ensure safe disposal.
20. Carry out welding, flame cutting and grinding work on the plant only if this has been expressly authorised, as there may be a risk of explosion and fire.
21. Before carrying out welding, flame cutting and grinding operations, clean the plant and its surroundings from dust and other flammable substances and make sure the premises are adequately ventilated as there may be a risk of explosion.
22. Always ensure that operators are provided with ear defenders of approved pattern and that these are worn at all times when the plant is operating.
23. Ensure operators wear a suitable face mask where exposed to possible harmful effects of air pollution of any kind.

Hydraulic and Pneumatic Equipment

24. Only persons having special knowledge and experience in hydraulic systems may carry out work on hydraulic equipment.
25. Check all lines, hoses and screwed connections regularly for leaks and obvious damage. Repair damage immediately. Splashed oil may cause injury and fire.
26. Depressurise all system sections and pressure pipes [hydraulic system, compressed air system] to be removed in accordance with the specific instructions for the unit concerned before carrying out any repair work.
27. Hydraulic and compressed air lines must be laid and fitted properly. Ensure that no connections are interchanged. The fittings, lengths and quality of the hoses must comply with the technical requirements.
28. Always practice extreme cleanliness servicing hydraulic components.
29. Hydraulic fluid under pressure can penetrate the skin causing serious injury.
30. Always use a piece of cardboard to check for leaks. Do not use your hand.
31. If fluid is injected under the skin, it must be surgically removed or gangrene will result.
32. Get medical help immediately.
33. Always relieve pressure from the hydraulic system before carrying out any kind of maintenance or adjustment.

Hazardous Substances

1. Ensure that correct procedures are formulated to safely handle hazardous materials by correct identification, labelling, storage, use and disposal.
2. All hazardous materials must be handled strictly in accordance with the manufacturers instructions and all applicable regulations observed at all times.

Transporting, Manoeuvring and Re - commissioning

3. The plant is remote controlled and may start without notice. Stay clear of the plant.
4. The plant must be loaded and transported only in accordance with the operating instructions.
5. For manoeuvring the plant, observe the prescribed transport position, admissible speed and itinerary.
6. Use only appropriate means of transport and lifting equipment where applicable of adequate capacity.
7. The re-commissioning procedure must be strictly in accordance with the operating instructions.
8. Before travelling with the plant, check that the braking and any signalling and lighting systems are fully functional.
9. Before setting the plant in motion always check that the accessories have been safely stowed away.
10. When travelling on public roads, ways and places, always observe the valid traffic regulations and, if necessary, ensure beforehand that the plant is in a condition compatible with these regulations.
11. In conditions of poor visibility and after dark, always switch on the lighting system of the transporting vehicle.
12. When crossing underpasses, bridges and tunnels or when passing under overhead lines always make sure that there is sufficient clearance.
13. Never travel across slopes; always keep the working equipment and the load close to the ground, especially when travelling downhill.
14. On sloping terrain, always adapt your travelling speed to the relevant ground conditions. Never change to a lower gear on a slope. Always change gear before reaching a slope.

Safety Signs

Location

1. Refer to plant specification and information for the identification and positions of safety signs on the plant.

04

Maintenance

2. Replace any missing or damaged safety signs.
3. Keep operator safety in mind at all times.
4. Keep safety signs clean using mild soap and water only. Do not use solvent based cleaners because they may damage the safety signs.

Illustrations

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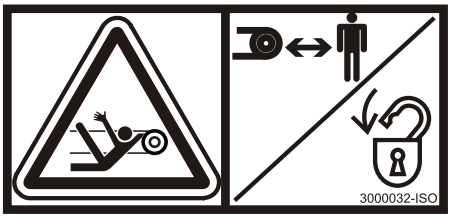

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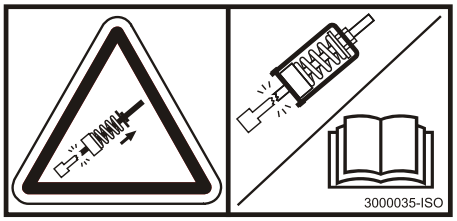

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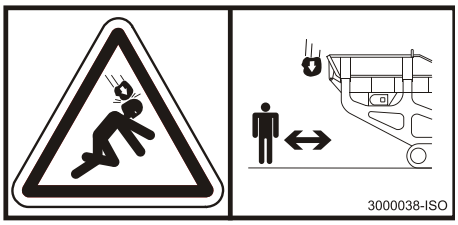

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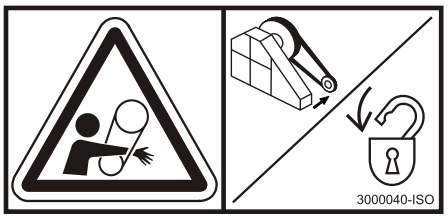

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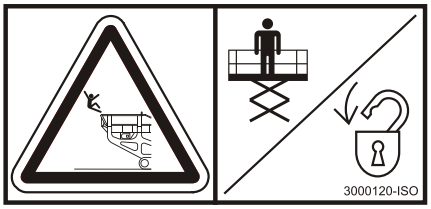

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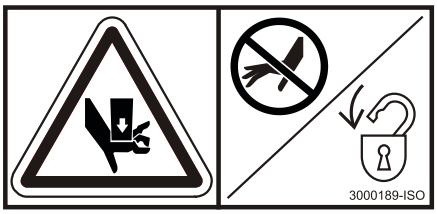

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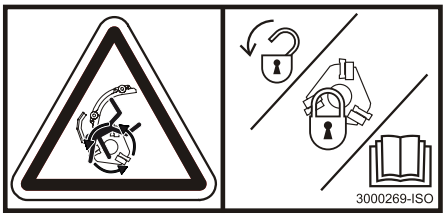

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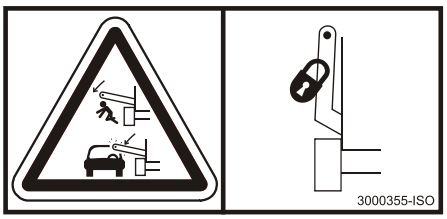

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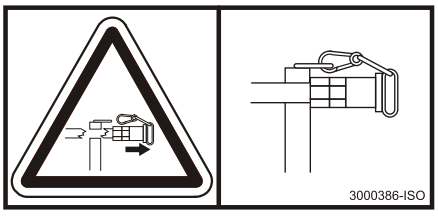

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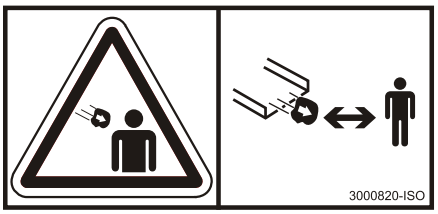

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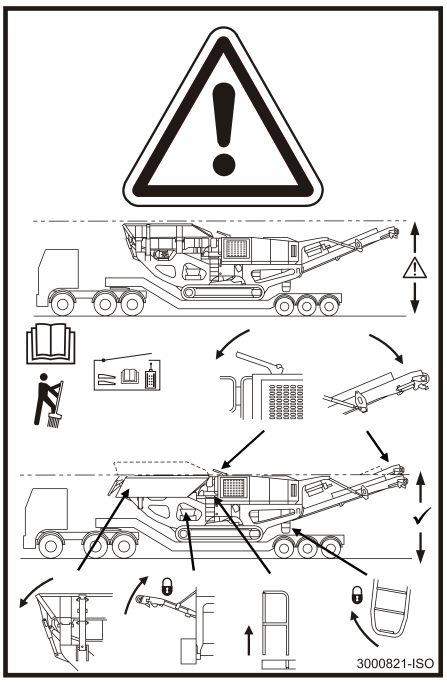

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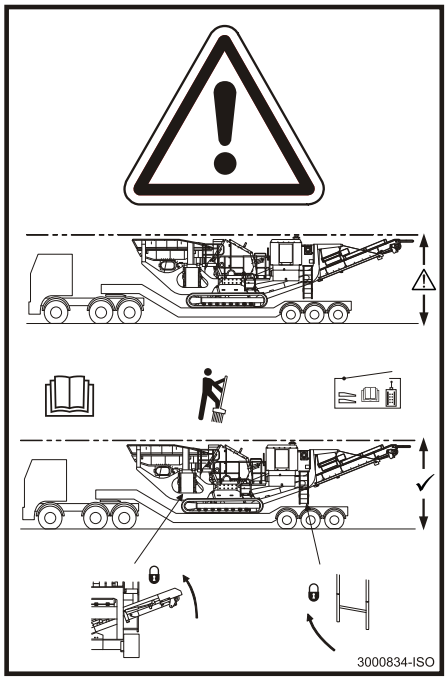

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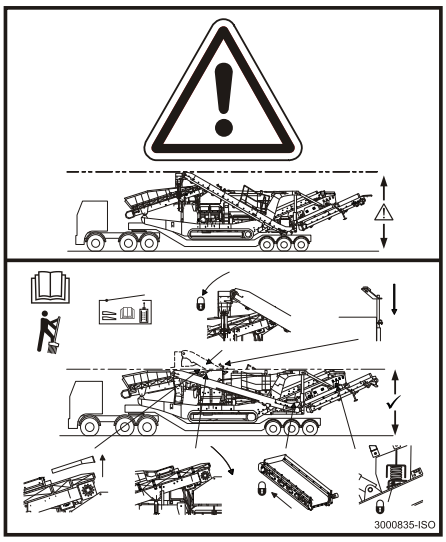

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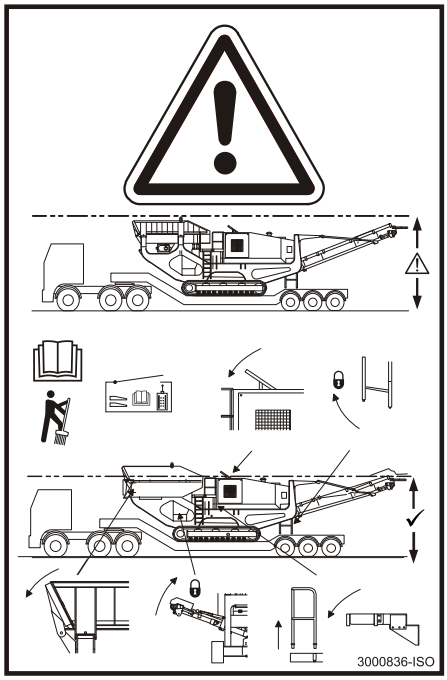

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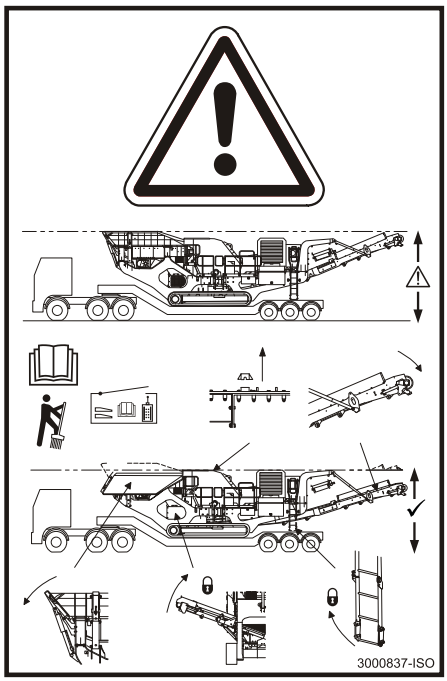

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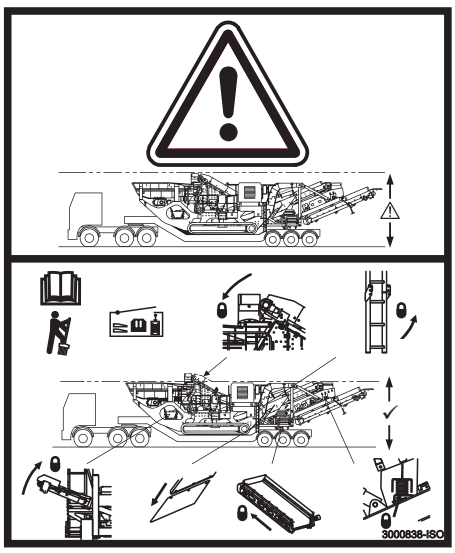

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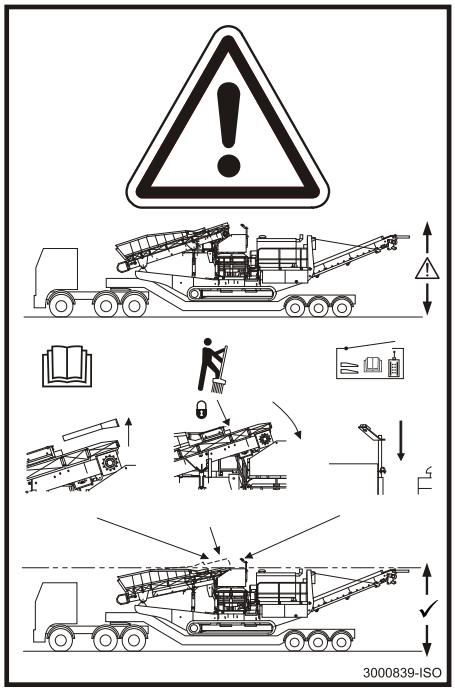

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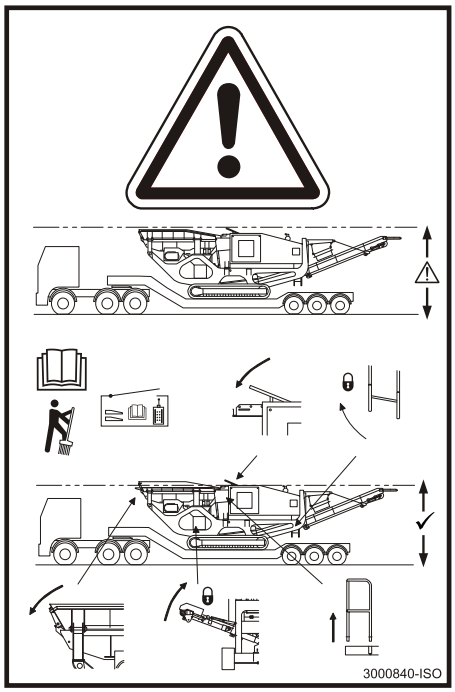

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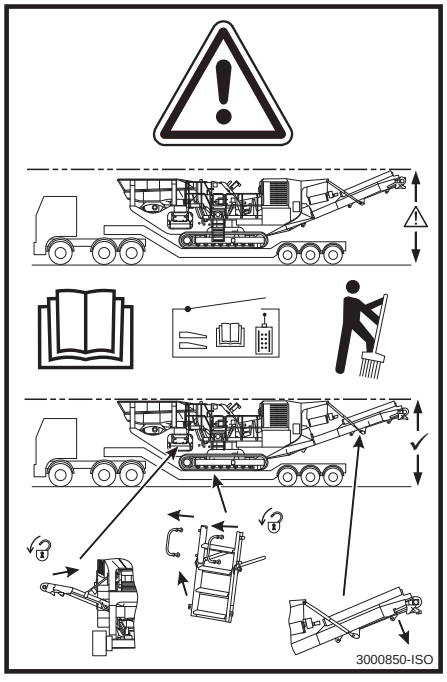

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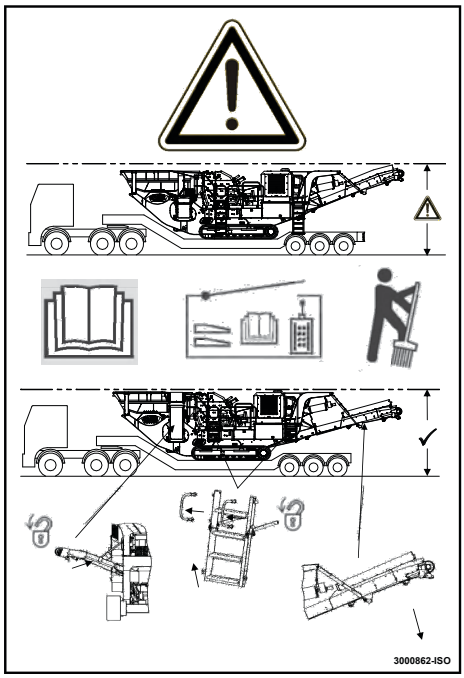

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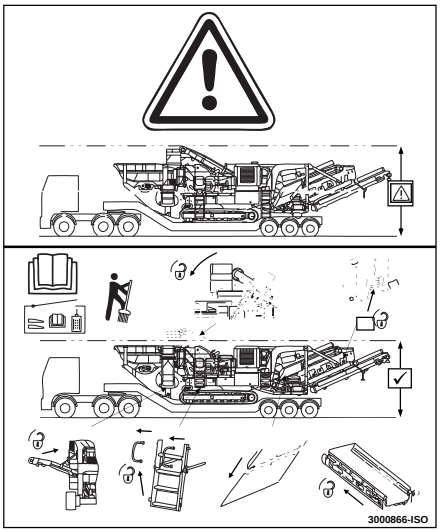

03 EN General Information

General

1. The plant has been manufactured with quality materials and assembled and tested with care.
2. Close attention has been paid in assembly, tests and final inspection.
3. We are confident that the plant will give you every satisfaction over a long period.
4. The plant is simple to operate and adjust. Expert assistance is seldom required, provided that ordinary care is exercised in daily use.
5. The plant has been built in accordance with current standards and recognised safety rules.
6. It is designed to be reliable, efficient and safe when used and maintained in accordance with the instructions given in this manual.

7. When the plant is new and first commissioned, refer to initial checks - running in. 33

EC Conformity

8. This plant is in conformity with the provisions of the current EC Machinery Directive.

CE
2006/42/EC

Units of Measure

9. Metric ISO units are used within this manual.

Threads and Fasteners

10. Metric threads and fasteners are used throughout the plant normally.
11. Where a standard component is used on the plant, the thread and fastener system on that component may not be metric.

Copyright

Operating Temperature

1. The normal operating temperature range of the plant is -12°C to +40°C (+10.4°F to +104°F). Refer to the engine operation manual also. For use in temperatures outside of this range, contact your Powerscreen® dealer or Powerscreen® technical support department for details.
2. Appropriate oils, lubricants & coolant to suit the local operating environment and conditions must be used, as specified in the manual.

Information and Advice

3. If you need information or advice regarding your plant or wish to order additional copies of this manual, contact your local Powerscreen® dealer or Powerscreen® technical support.

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04 EN Plant Specification and Information

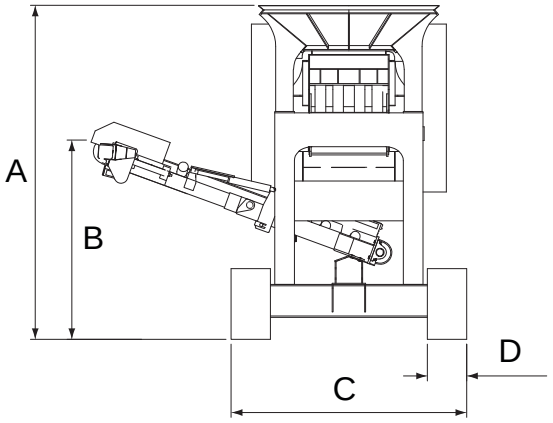
Dimensions

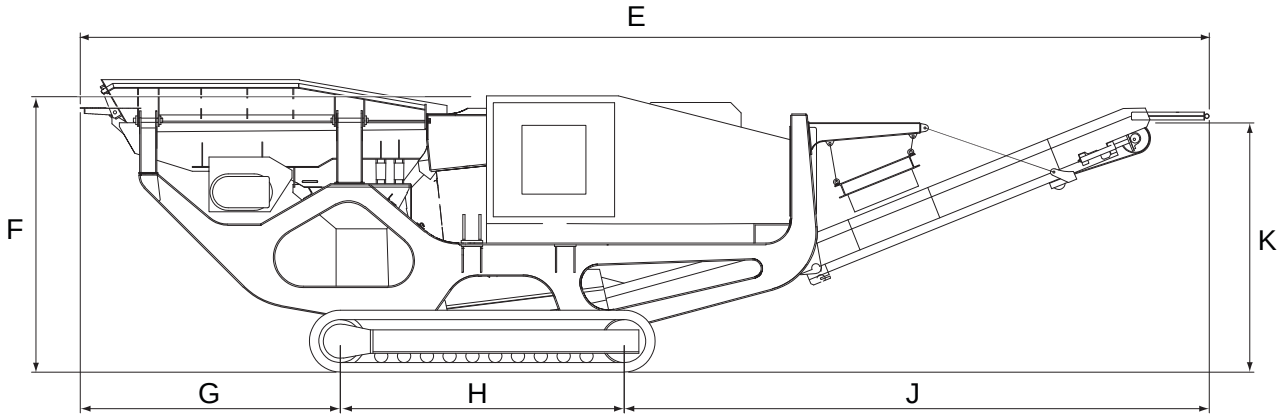
Working Dimensions

All dimensions are in millimetres.

A 3400mm	F 3200mm
B 2030mm	G 3023mm
C 2400mm	H 3300mm
D 400mm	J 6798mm
E 13120mm	K 2897mm

Feed Hopper Raised or Fixed Hopper Fitted





Transport Dimensions

Overall Length: 12220mm

Overall Width: 2500mm with dirt conveyor up

Overall Height [Excluding Transport Trailer] :
3200mm with hopper folded down

or 3400mm if alternative fixed hopper is fitted

Weight

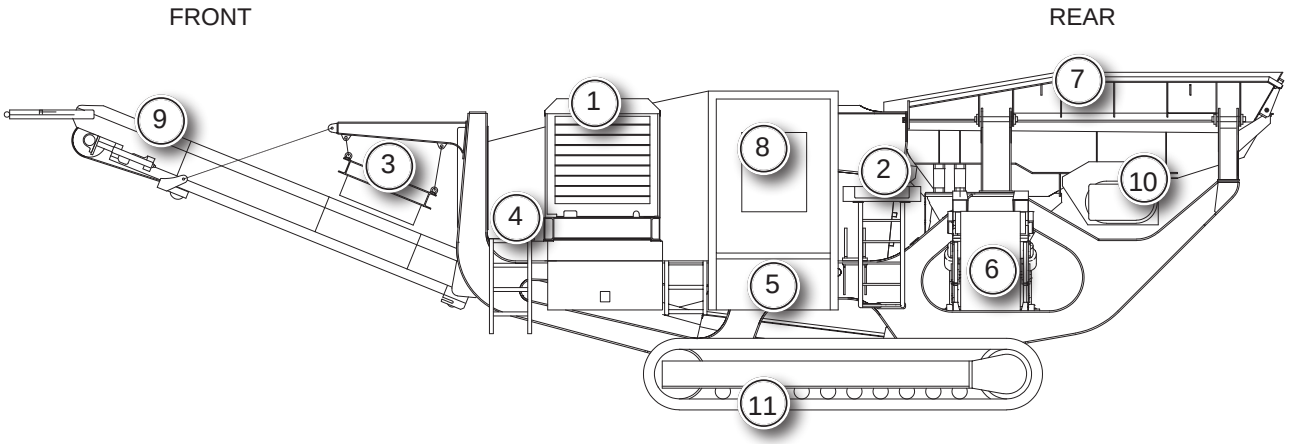
The weight is dependant on options and type of crusher fitted, therefore refer to plate fixed to plant.

Plant Description

Recycling/Crushing plant with Diesel/Hydraulic drives. Refer to the diagrams to identify the main areas of the plant and the term with which they are referred to in this manual.

PLEASE NOTE

The plant has been designed and built to provide a range of equipment choices to meet a wide variety of individual needs and preferences as selected at the time of initial purchase.



1 Engine Power pack
2 Maintenance Platform
3 Optional Magnetic Over band Separator
4 Engine Maintenance Platform
5 Control Box
6 Optional Dirt Conveyor
7 Feed Hopper
8 Jaw Crusher
9 Product Conveyor
10 Vibrating Feeder
11 Tracks

Standard Fittings

Hopper and Feeder

1. Hydraulic folding hopper sides and manually operated end plate, fabricated in abrasion resistant steel plate. A hopper fixed in the raised position can be fitted optionally.
2. Spring mounted vibrating grille feeder, driven by a heavy duty vibrating mechanical unit with twin eccentric rotating shafts.
3. Drive is by hydraulic motor mounted on vibrating unit with variable speed control. An optional radio remote control to stop and start the feeder may be supplied.
4. Feeder grille is a double section of welded tapered finger type bars, fabricated in abrasion resistant steel.

Under screen

5. The under screen has a removable mesh, used in conjunction with the optional dirt conveyor. If the material is able to be screened, it allows the extraction of smaller fines onto the dirt conveyor with the coarser material discharging onto the product conveyor.
6. By removing the mesh entirely all the fines are directed to the dirt conveyor.
7. A rubber blanking mat will be fitted where the plant does not have the dirt conveyor fitted.

Crusher

8. Single toggle jaw crusher with feed gape of 600mm (24in) and width of 900mm (36in), operated by eccentric shaft driven by vee belts and pulleys from the engine.
9. The MA model discharge setting has manual adjustment by shims, with manual hydraulic assistance.
10. The HA model has discharge setting adjustment by hydraulically operated wedges.

Product Conveyor

11. Plain troughed belt EP500/3 to BS490 and DIN22102. Belt includes a vulcanised joint. Hydraulic motor drive via coupling to drive drum at pre-set speed. Canvas type removable dust covers are fitted at the head end.

Tracks

12. Heavy-duty track pitch chain tracks driven by integral hydraulic motors and gearboxes with dual speed control by umbilical control, [or radio remote control, if fitted].

Power Pack

13. Water-cooled diesel engine driving the crusher via an hydraulically operated mechanical clutch and hydraulic pumps.
14. The hydraulic pumps drive the tracks, feeder, product conveyor and other items.
15. Engine is enclosed with integral hydraulic fluid tank and batteries.

Maintenance Platforms

16. A steel grid maintenance platform is provided on one side of the feeder fitted with double row handrails and access ladder. Maintenance platforms are also provided to gain access to the rear of the crusher and to the power pack

Controls

17. Controls are fitted on the plant for setting up and preparing the plant for transport, adjusting crusher settings, vibrating feeder and conveyors. Engine and plant controls are in a lockable box.

18. An umbilical control unit is provided for operating the tracks to move the plant.

19. Emergency stop buttons are provided on each side of the plant and on the umbilical control.

Guards

20. Wire mesh or sheet metal guards are provided for all drives, flywheels, pulleys, couplings, gears and vee belts. The guards provided are designed and manufactured to ensure so far as reasonably practicable that the machinery and plant on which they are fitted can be operated safely and without risk to health when properly used. However, the company cannot guarantee that the guards provided will meet the requirements laid down by individual inspectors.

Specifications

21. Every endeavour will be made to supply equipment as specified, but we reserve the right, where necessary, to amend specifications without prior notice as we operate a policy of continual product development.

22. It cannot be guaranteed that the equipment specified will meet any specific requirements in respect of noise or vibration levels, dust emission, or any other factors relevant to health and safety measures or environmental protection needs.

Optional Extra Fittings

Dust suppression sprays

23. Spray bars with multi-atomising nozzles are mounted over the crusher mouth, the product conveyor feed and discharge points.

Dirt Conveyor

24. The side discharge dirt conveyor with a hydraulic folding facility for transportation. Belt is plain troughed and bearings are grease lubricated.

25. The fixed speed conveyor is hydraulically driven from the head drum. It is mounted on the left hand side viewed from the feed end.

Radio Remote control

26. A remote radio control and receiver can be fitted for operating the tracks to move the plant. This radio control also provides stop and start control for the vibrating feeder from a remote position.

Magnetic Separator

27. Self-cleaning cross belt over band magnetic separator with permanent magnet, suspended over the product conveyor. Hydraulic motor drive, pre-set variable control.

Belt Weigher

28. An optional material load sensor fitted to main product conveyor, with flow rate and totalizer displays on a chassis mounted control box.

Water Pump

29. A hydraulically driven pump and controls to provide a pressurised water supply for the dust suppression sprays.

Fuel transfer Pump

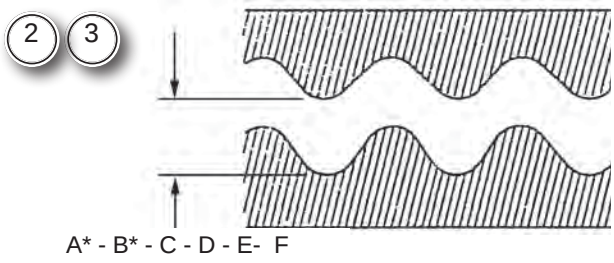
30. Fuel transfer pump, electrically driven from the engine 24v supply.

Further options

31. For all other available extras and option details, contact Powerscreen®.

Crusher Capacity

1. In order to obtain the optimum output from the crusher, it's feed should be continuous and regulated. Additionally, all feed should be of a size that will readily enter the crusher chamber and, in order to avoid packing of the discharge opening and excessive wear of the plant jaws, under size material should be removed from the feed prior to entry to the crusher.



M.A. Model	
Setting	Typical Output
mm	tonnes/hour
A* 40	60-70
B* 50	70-90
C 63	85-110
D 75	90-115
E 100	120-140
F 125	145-175

H.A. Model	
Settings for New Jaws	
Open	Closed
[at rest]	[working]
Minimum B	
85mm	50mm
Maximum	
160mm	120mm
*Re-cycling Materials	
Minimum A*	
*75mm	*40mm

2. The discharge rates given are based on crushing clean, dry limestone weighing approximately 1600kg/m³ (100lbs/ft³) loose and having a specific gravity of 2.6. Wet feed material reduces the crusher discharge rate.
3. Crusher discharge settings marked * are for re-cycling operations only. The crusher must not be operated at a discharge opening less than shown for quarry applications without prior consultation with Powerscreen®.
4. The only exception to this being for crushing bricks and demolition materials. Operating the crusher below this setting may result in extensive damage.

NOTICE

DO NOT feed non crushable material larger than the closed jaw gap setting.

5. The percentage of oversize output from the crusher, for a given discharge opening, will depend largely on the quality and character of the feed material.

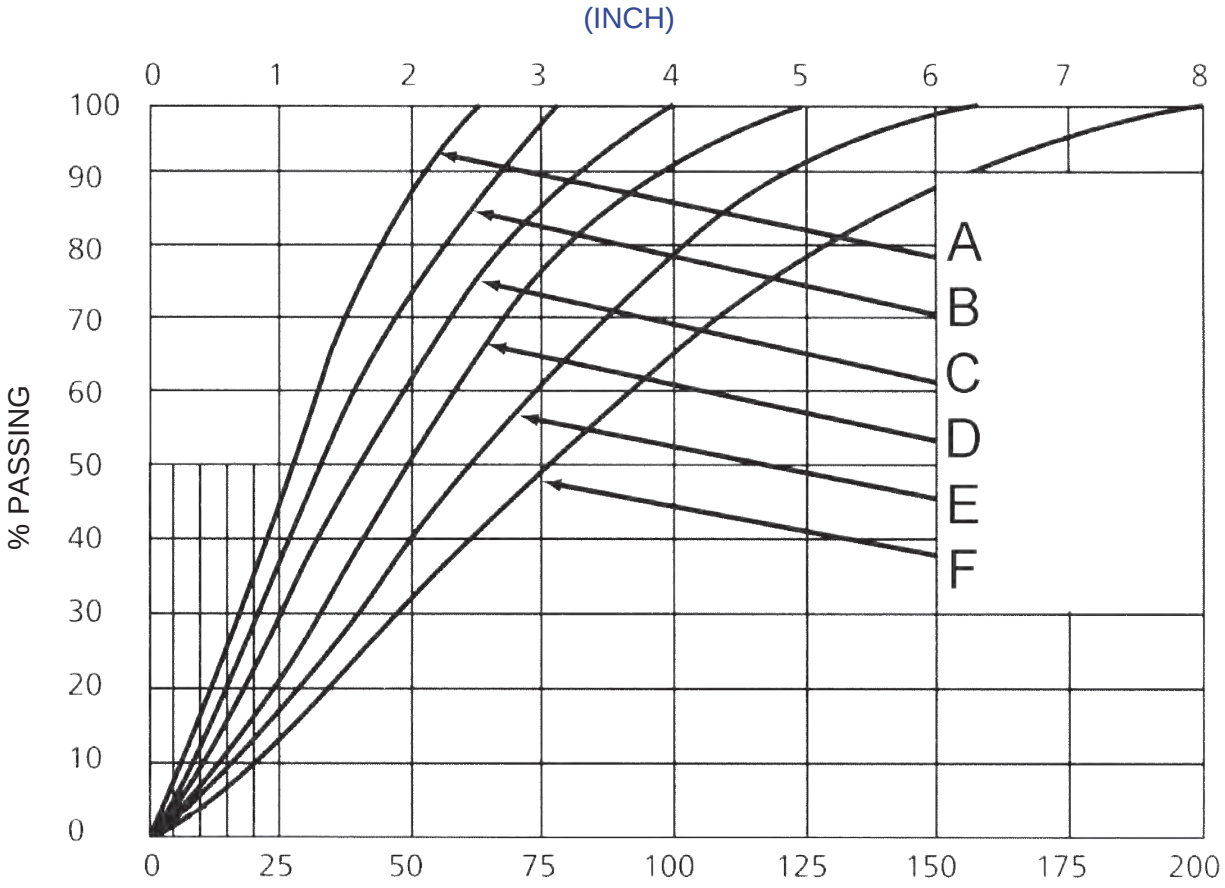
6. The graph shows an estimated analysis of the product for different discharge openings.

   Note:- The crusher has been designed to work with feed materials having a 10% fines value not exceeding 390kN (87675 lbf).

7. Product gradings are typical only and will vary depending on material characteristics.

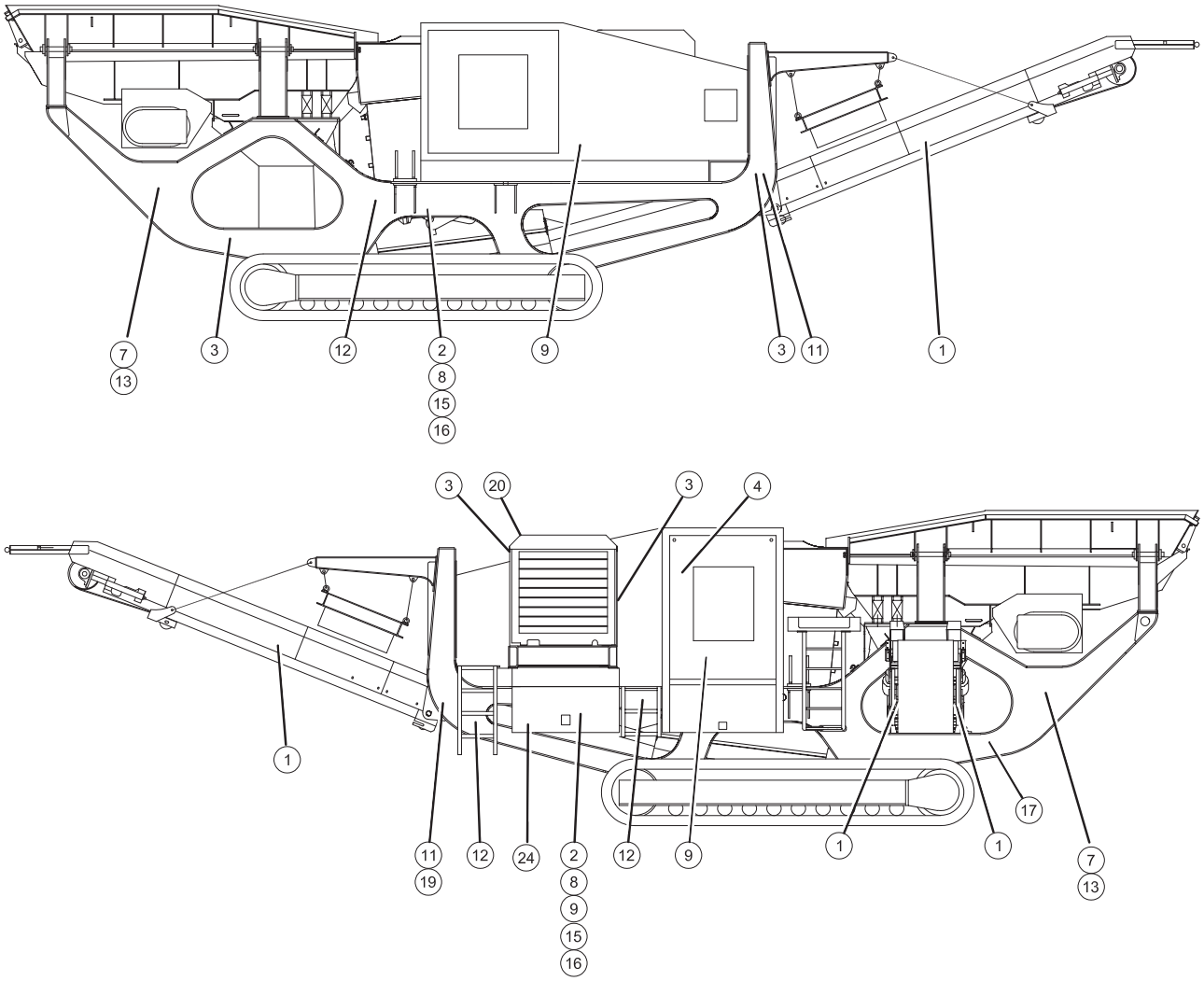
8. When the optional dirt conveyor is fitted, material passing through the vibrating feeder bars will by-pass the crusher. The coarser material discharges to the product conveyor and finer material to the dirt conveyor.

9. The optional magnetic over band separator, where fitted, is intended to extract ferrous materials from the crushed product but this material in the feed must be limited to a size that will not cause damage to the crusher.



PRODUCT ANALYSIS

Location of Safety Signs



Item	Part No [ISO]
1	3000032-ISO
2	3000033-ISO
3	3000034-ISO
4	3000035-ISO
7	3000038-ISO
8	3000039-ISO
9	3000040-ISO
11	3000043-ISO
12	3000118-ISO
13	3000120-ISO
15	3000196-ISO
16	3000284-ISO
17	3000355-ISO
19	3000820-ISO
20	3000823-ISO
24	3000840-ISO

10 EN Preparing to Move the Plant

Initial Preparation

Before moving the plant it must be cleared of any material.

1. Observe all safety warnings.

2. Refer to Preparing to finish crushing to make sure the feed hopper and crusher are empty and that all materials have run off all of the conveyors.

31

3. Clear the tracks of any obstructions and remove any crushed or fine material and dirt.

⚠ WARNING

Prior to attempting any manoeuvring of the plant the tracks must be free of obstructions, including crushed material and fine material. Do not push or tow the plant.

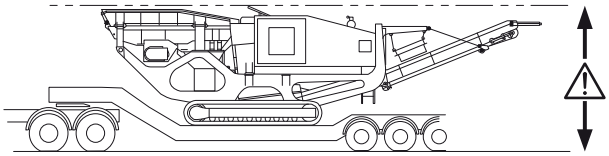
Failure to observe this warning could result in danger to persons and damage to the plant which may also invalidate warranty.

4. If the plant is only being moved using the tracks to a new working position follow instructions in moving the plant.

12

Preparing for Loading

5. Before loading, the plant must be prepared for transportation, refer to initial preparation.



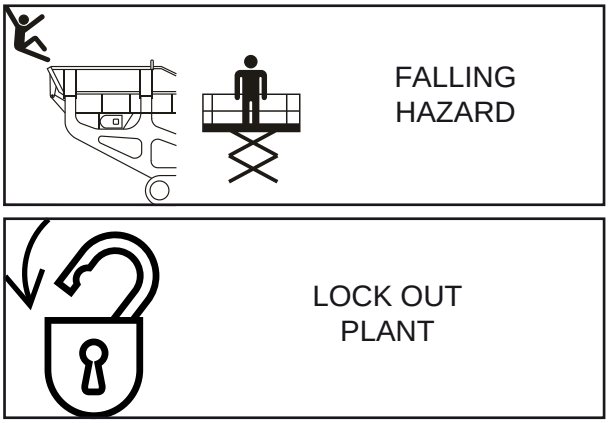
6. Refer to specification and plant information for travel dimensions.

04

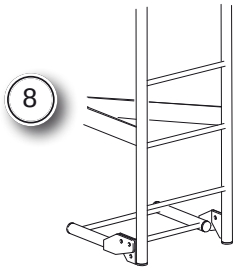
7. Observe all safety warnings.

WARNING

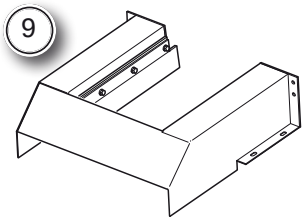
Refer to Safety Notices Section for relevant warning and procedure



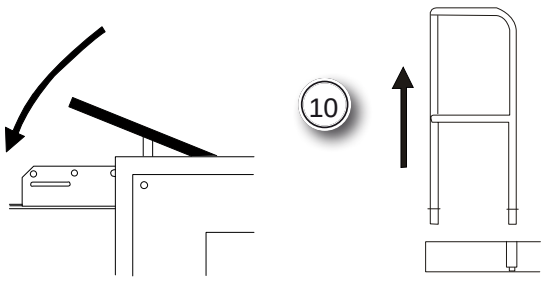
8. Fold up the maintenance platform ladder to the raised position.



9. Remove the dirt conveyor head drum guard. This is necessary before folding the conveyor for transport.



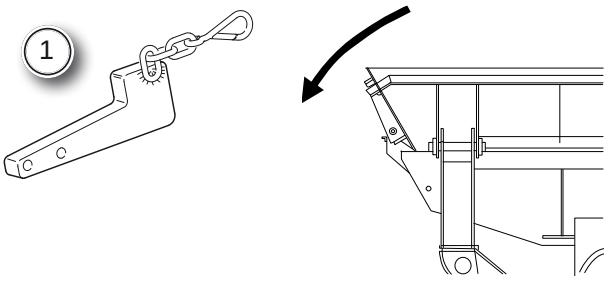
10. Ensure all loose items are carefully stowed and secured if these are to be transported on the plant.



Lowering Hopper for Transport

[Not applicable if a fixed hopper is fitted]

1. Using suitable lifting equipment to hold the end plate, remove the corner wedges securing the end plate to the side plates and lower the end plate.



⚠ WARNING

DO NOT attempt to undo any fasteners holding the manual folding hopper end plate until it is securely held by lifting equipment to prevent any movement.

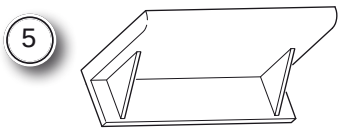
2. Start the engine, see engine starting.

13

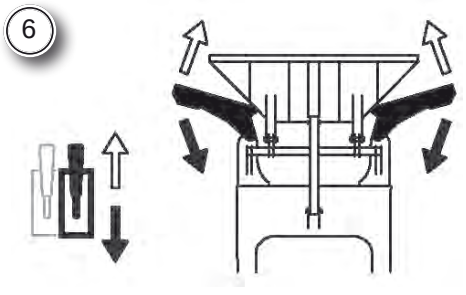
3. Set engine speed to low.

4. Set the mode switch to plant operation.

5. Remove the four hopper side plate wedges.



6. Use the hydraulic valve lever at the rear of the plant to lower the hopper sides.

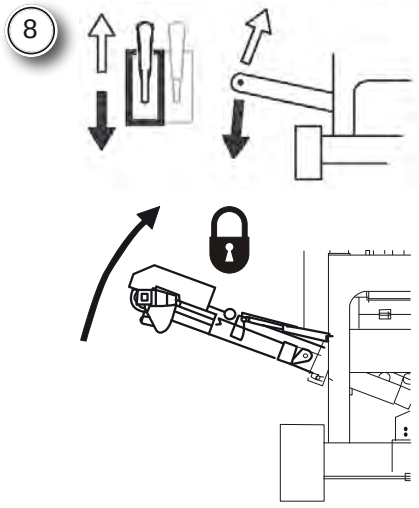


7. Unfasten the clips securing the chains and hopper locking wedges and place them in the toolbox.

Folding Dirt Conveyor for Transport

[If fitted]

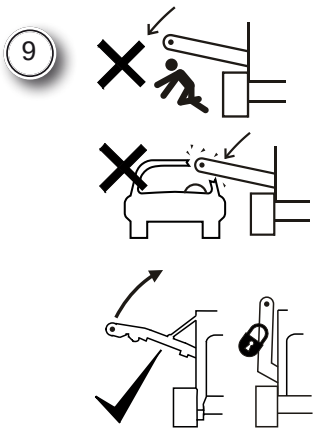
8. Use the hydraulic valve lever at the rear of the plant to raise and fold the dirt conveyor into the transport position.



NOTICE

During folding of the dirt conveyor ensure that the hydraulic hoses and conveyor belt are not entangled with any part of the plant.

9. Secure the folded dirt conveyor for transportation.



Final Preparation

10. Refer to unloading and loading to manoeuvre the plant and load on to the transporting trailer.

11 12

⚠ WARNING

Prior to transportation always check the plant for loose or damaged components.

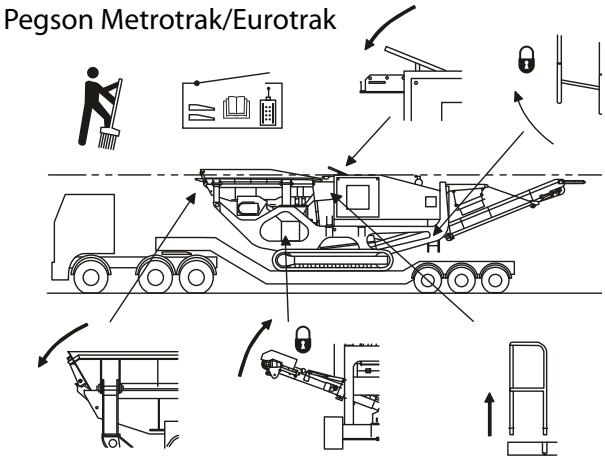
Fasten all loose parts, replace missing items or make repairs as found necessary to ensure that all components are safely secured during transportation.

11 Stop the engine, unless required further, refer to engine stop.

15

NOTICE

To obtain the minimum transport height, remove the engine air inlet filter. Fit the transportation cap in its place.



11 EN Unload and Load Plant - Transport Trailer

Unloading from Trailer

1. If the plant has been manufactured to connect to a special rear bogie, refer to the special instructions to separate the plant from its bogie.

01

2. Removing the fastenings securing the plant and any loose items to a trailer is the responsibility of the haulage contractor.
3. A tracked plant will normally be secured to a transport trailer.
4. Observe all safety warnings.
5. Make sure suitable ramps are positioned at the end of the trailer to unload the plant.
6. Check that any loose items transported with the plant will not cause a hazard while unloading.

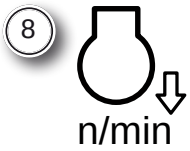
NOTICE

On some plants, the air inlet filter may have been removed to obtain the minimum transport height, remove transportation cap and fit the air filter. Store the transport cap in the toolbox.

7. Start the engine, see engine starting.

13

8. Set the engine at the slowest speed, if applicable. Some plants have automatic engine speed control.



9. Unload the plant slowly off the trailer into a safe position or plant operating position, manoeuvring the plant with the tracks. Use the umbilical control or the remote radio control, if fitted, see moving the plant.

12

10. Stop the engine, see engine stop, unless required further.

15

Loading on to Trailer

11. Before loading, the plant must be prepared for transport, refer to preparing to move plant.

12. Check that the travelling dimensions and weight, when loaded, will be within the regulation limits, refer to plant specification and information and plate fixed to the plant. 04

13. Observe all safety warnings.

14. Ensure all loose items are carefully stowed and secured if these are to be transported on the plant.

15. Make sure suitable ramps are positioned at the end of the trailer to load the plant.

16. Start the engine, see engine starting. 13

17. Set the engine at the slowest speed, if applicable. Some plants have automatic engine speed control.

18. Load the plant slowly on the trailer, manoeuvring the plant with the tracks, using the umbilical control or the remote radio control, if fitted, see moving the plant. 12

19. Stop the engine, see engine stop, unless required further. 15

NOTICE

To obtain the minimum transport height on some plants it is necessary to remove the engine air inlet filter. If necessary, remove it when the engine has been stopped. Fit the transport cap in its place.

18. Securing the plant and any loose items to the transport trailer is the responsibility of the haulage contractor.

⚠ CAUTION

Ensure that all components are safely secured for transport. Fasten all loose parts, replace missing items or make repairs as found necessary.

Prior to transport always check the plant for loose or damaged components.

12 EN Moving the Plant

Moving the plant on the tracks

1. The plant is manoeuvred with the tracks using the umbilical control or the radio remote control, if fitted.

2. Prepare the plant for moving, see preparing to move the plant. 10

Initial Preparation

3. Observe all safety warnings.

4. Start the engine, see engine starting. 13

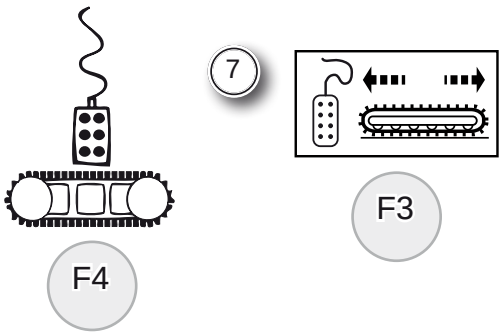
5. Set operation mode to track. 10

Preparing Umbilical Control

6. The umbilical control is the default track control on some plants and does not have to be selected. De-select the radio remote control, if fitted, to activate the umbilical control. Refer to preparing to move plant - setting to track mode.

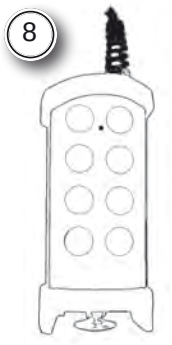
10

7. If an umbilical option is shown, set track control to umbilical, referring to icon and appropriate function button, as plants vary.

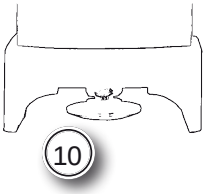


8. Take the umbilical control from the control box

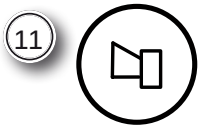
9. Stand well clear of the plant.



10. Hold the control with the stop button nearest to the operator



11. Press the horn button to sound the safety warning horn. The missing beep or break in the alarm after five seconds indicates that the tracks are ready for use. The alarm will continue to sound.



12. To move the plant, refer to manoeuvring the plant.

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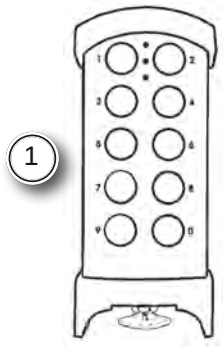
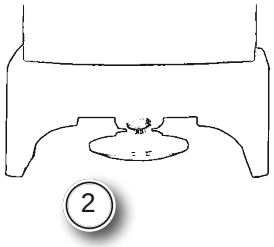
Preparing Radio Control [if fitted]

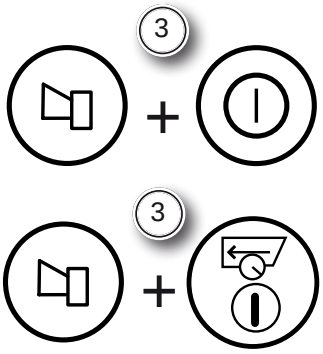
1. Take the radio remote control from the control box



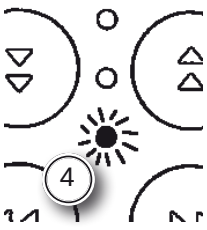
2. Hold the radio remote control with the stop button nearest to the operator and switch it on by pulling out the stop button.



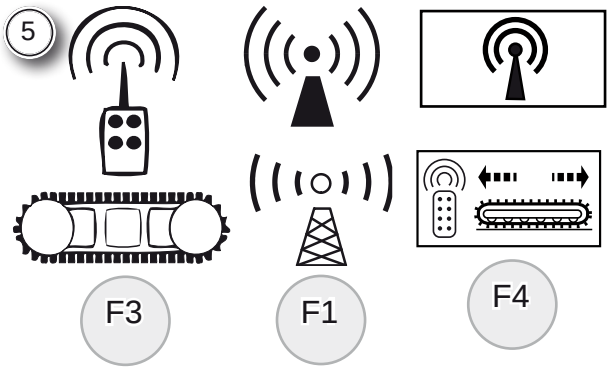
3. Press both of the safety buttons at the same time for at least 1 second and a red light will illuminate. Release the safety buttons.



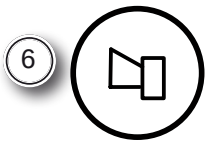
4. The red light will change colour to green when it is ready for use.



5. Set track control mode to radio, referring to icon and appropriate control, as plants vary.



6. Press the horn button to sound the alarm. The missing beep or break in the alarm after five seconds indicates that the tracks are ready for use. The alarm will continue to sound.



7. To move the plant, refer to manoeuvring the plant.

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8. The radio control has a safety function that prevents any action from involuntary cutting-in when it is switched on.

9. The radio control will not start if a button is pressed or stuck prior to the missing beep in the pre-start warning.

10. Keep the internal re-chargable battery fully charged, see radio remote control.

14

Manoeuvring the Plant

⚠ WARNING

Prior to manoeuvring the plant, the tracks must be free of obstructions, including crushed material and fines. The tracks must be correctly tensioned before moving.

Do not push or tow the plant. Failure to observe this warning could result in danger to persons and damage to the plant which may invalidate warranty.

1. The plant cannot be manoeuvred when mode is set to plant or 0.
2. The alarm sounds continuously whilst the plant is being manoeuvred.

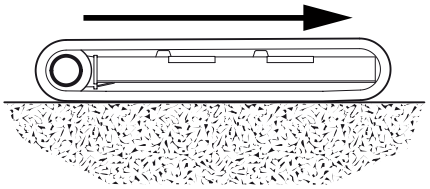
⚠ DANGER

DO NOT stand on any of the maintenance platforms or ladders of the plant whilst it is being manoeuvred.

Ensure all personnel are clear of the plant before manoeuvring.

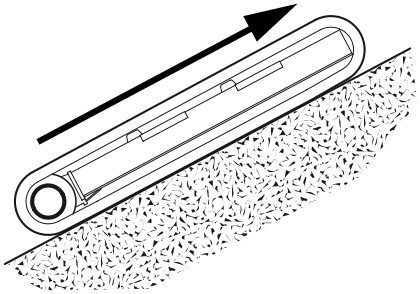
When manoeuvring the plant make sure you stand well clear of the plant but are in a position to have all-round vision to see any obstacles or dangers that may lie ahead such as personnel, overhead cables, ditches, unsafe roadways etc.

3. To prolong the life of the track and prevent avoidable damage to the track components, wherever possible drive the plant with the circular track drive gearbox in the position shown in the diagrams.

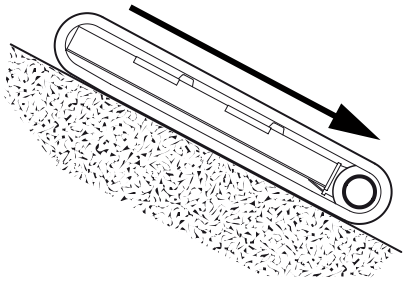


4. This is particularly important if the plant is being driven up an incline.

5. Do not manoeuvre the plant on a gradient [fore and aft directions] steeper than 30°, as damage may occur to the engine and/or plant.



6. The track drive gearbox is not fitted in the same position on all plants, relative to the other parts of the plant.



7. Avoid manoeuvring the plant over extremely uneven ground or damage may occur.

8. Control valves mounted on the engine and beneath the feeder are NOT to be used to manoeuvre the plant. They are for use by Powerscreen® service engineers only.

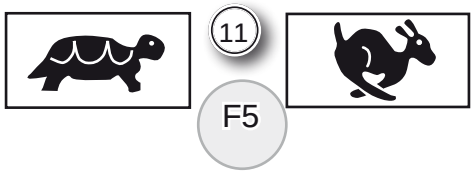
9. Initial start up in cold weather may result in a tendency to steer to the right whilst tracking fast forward due to the hydraulic oil being cold. Run the plant for about 10 minutes with the conveyor and feeder running to warm the oil, prior to manoeuvring the plant.

10. Stand well clear of the plant.

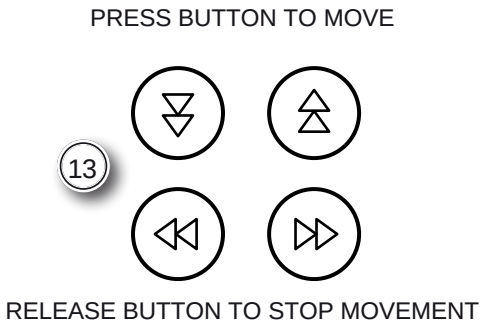
⚠ DANGER

Extreme care must be used when manoeuvring the plant with the umbilical control. Stand as far away as possible from the plant. Do not allow the cable of the hand set to sag and become entangled with the tracks.

11. Some plants can be driven with different engine speeds which provides two speed ranges. Select range to suit requirements, the slow speed in high range is equal to the fast speed in slow range.
12. Only use the faster speed where safe to do so. Use the slower speed for more accurate manoeuvring.



13. The directional control buttons are double pressure switches. The initial pressure 1 operating the slow speed mode and second pressure 2 operates the faster speed.



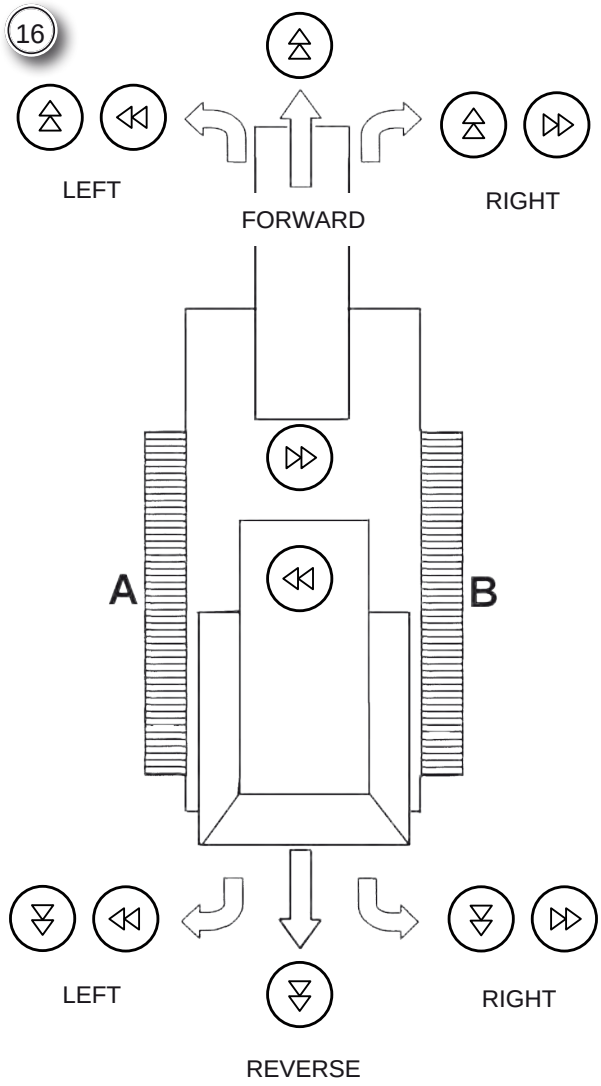
14. Press the buttons to manoeuvre the plant in the desired direction.
15. Release the buttons to stop movement.

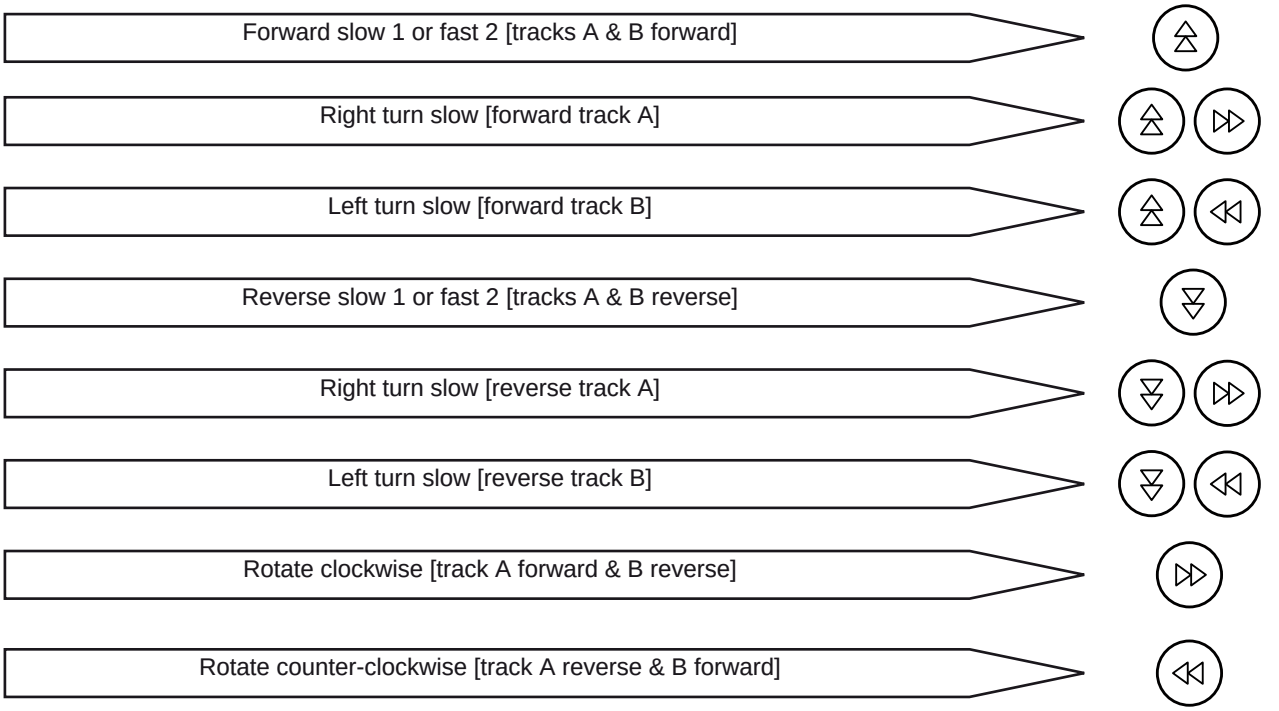
NOTICES

If the plant is being moved using the radio remote control and moves out of the operating range of the radio or the battery becomes discharged, the engine and plant will stop.

Pressing the stop button on the radio or umbilical control will immediately halt the operation and cut out the engine but it is necessary to manually switch off the engine ignition.

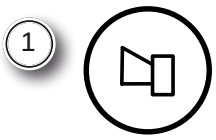
16. Refer to direction control diagram.
17. The controls will stop operating if the track control has not been used for a period of time.
18. The engine speed will vary with the use of the track controls.



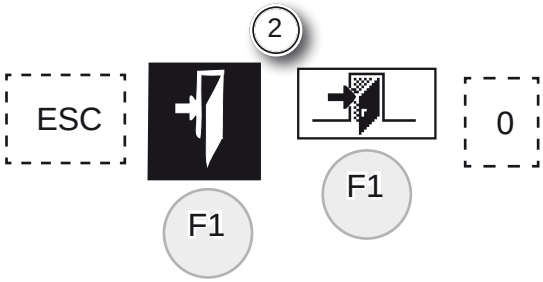


Finish Manoeuvring the Plant

1. When the plant is in the correct position, press the horn button to disengage the tracks which will turn the safety warning horn off.



2. Set track operation mode off by esc, exit, ‘0’ or plant, depending on the type of controls fitted.



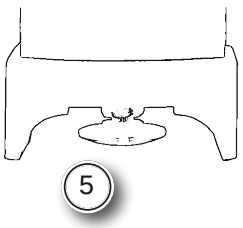
3. If crushing is to commence, see preparing to crush.

17

4. If not required further, switch off the engine, see engine stop.

15

5. If not required further, switch off the radio remote control, push in the stop button. This will also conserve the battery charge.



13 EN Engine Starting and Controls

[Cantrak + Caterpillar 6.6]

⚠ WARNING

Ensure that all safety aspects are checked before starting the engine.

Whilst the engine is running and the operation mode is changed from ‘Track’ to '0' to ‘Plant’ the safety alarm will sound for 10 seconds. When the alarm has stopped the plant operation can be started.

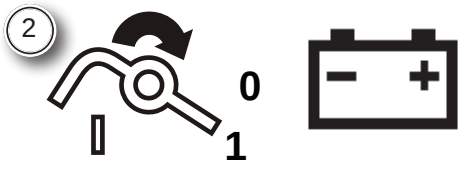
Engine Start-Up

1. Observe all safety warnings.

NOTICE

If the air inlet filter has been removed to obtain the minimum transport height, remove transportation cap and fit the air filter. Store the transportation cap in the toolbox.

2. Turn the battery switch on to the ‘1’ position.



3. Make sure no emergency stop buttons are pressed in, including the umbilical control and, if active, the radio control stop button. Re-set all emergency stops by pulling or twisting out, depending on type fitted.

4. The plant and engine controls are located in the control box.

5. Set the operation mode switch to 0.

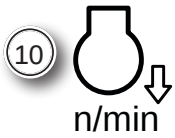
6. Set product conveyor switch to 0

7. Set the crusher or impactor switch to 0.

8. Set dirt conveyor switch to 0, if fitted.

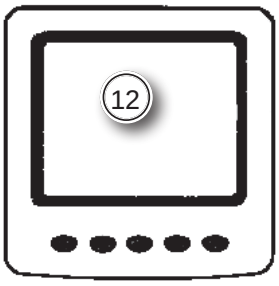
9. Set any other plant controls off to 0.

10. Set the engine to its slowest speed.



11. Turn on the ignition with the key to the first position only.

12. The Cantrak engine monitoring display screen will be switched on.



13. Pre-start audible warning will start.

14. The warning lamp, stop lamp and pre-heat glow plug will light together then go off. This is to check the bulbs are operational.

15. If the amber warning or red stop lamps flash or light continuously, refer to the engine manual for more information displayed by the warning and stop lamps.

16. Wait until the pre-heat glow plug lamp goes off and turn ignition key to the start position until the engine is running.

17. Release the key back to the first position as soon as the engine starts.

18. Allow the engine to reach normal operating temperature by running it for three to five minutes.

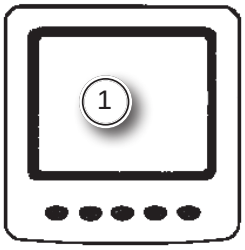
NOTICE

DO NOT increase the engine from idling speed to operation speed until after engaging the clutch and starting the crusher, to avoid damage to the clutch.

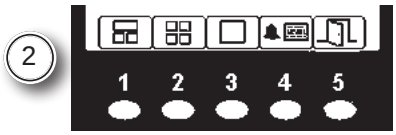
Cantrak Engine Monitor

Introduction

1. The Cantrak Engine Monitor is a graphical instrument clusters to display parameters and alarms.



2. The display has five buttons that change to suit the screen in use. The buttons give to access a graphical menu structure that uses standard and easily-understood icons to indicate the button's current function.



3. The required engine data and display can display the following formats:

   Analogue gauges

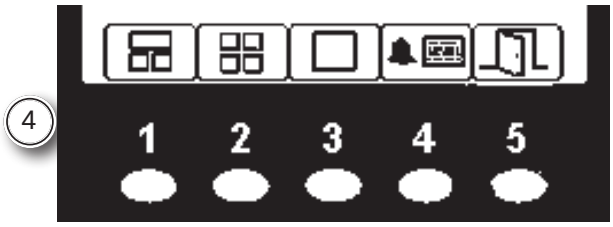
   Digital values

   Historical trend graphs

   Current and stored alarm messages

Buttons

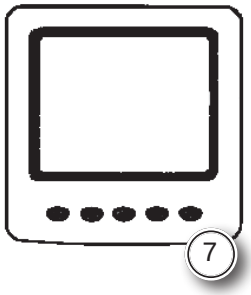
4. If any button from 1 to 4 is pressed, the display shows a context dependent icon representing the current function of the button.



5. The button icon part of the display will disappear after five seconds of inactivity.

6. This 'top level' button icon bar shows the selection options of the engine monitor:

7. Pressing button 5 briefly when the menu icons are not being displayed displays a contrast and lighting adjustment menu. If held for 3 seconds, the Configuration menu is shown.



Top Level Button Icons

8. Tri display - shows one large window and two smaller windows. Repeat presses cycle the display through the view options.

9. Quad display - shows data four equal sized windows. Repeat presses cycle the display around three different quad view options.

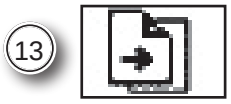
10. Uni display - shows data using a single window. Repeat presses cycle display through available parameters.

11. Active alarm display - shows current active alarm. Holding the key displays stored alarms.

12. Single brief press to exit from the menu.

Other Button Icons

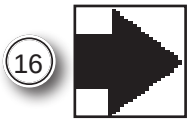
13. Pages - indicates that further pages of information are available by pressing to cycle through options for the screen being viewed.



14. Arrow up - move up to next item.

15. Arrow down - move down to next item.

16. Right arrow - go to next screen or select option.



17. Return arrow - go back to previous screen.

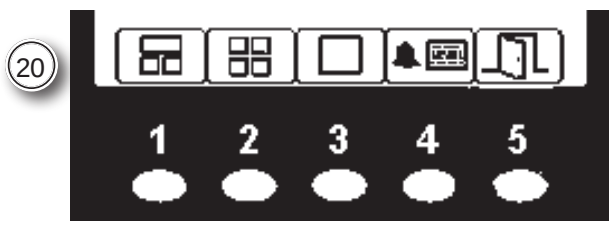
18. Alarm - acknowledge active alarm when an active alarm is being displayed.

Button Lock

19. The buttons can be locked so that they cannot be accidentally pressed.

20. Press buttons 1 and 5 simultaneously for one second to switch the button lock on or off.

21. A key symbol is displayed when a button is pressed and they are locked.



Displays

1. When power is applied, a start-up screen displays for approximately 7 seconds while the display performs a self test.
2. After the start-up screen disappears, the Engine Monitor displays readings on its virtual gauges.
3. The Engine Monitor displays the screen that was last displayed.
4. If data is not available from the engine, it will not be possible to select it.
5. If data becomes unavailable, dashes [- - -] will be shown on the screen.

Tri Display

6. Three windows intended to show the most frequently accessed engine data.

Quad Display

7. Four windows to display available data in digital number format only or as a gauge with numbers also displayed.
8. The windows can be configured to display various available data as listed in the data parameter and icons.

9. Configure quad screen - press.

10. The data displayed on a particular window can be selected by repeat pressing the appropriate button.

Uni Display

11. A single window to display data in a graph format, together with a numeric data header.

Data Parameters and Icons

1. The following data can be displayed

2. Engine Speed

3. Oil Pressure

4. Oil Temperature

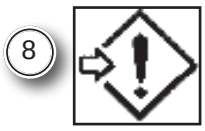
5. Coolant Temperature

6. Battery volts or amps

7. Engine Hours

Alarm Messages

8. When a current engine alarm is received, a flashing window appears overlaid over the screen in use and an alarm sound is activated.



9. If a current alarm message is flashing, press any button to view the message details.

10. The current alarm message will be displayed with a black background, which indicates an unacknowledged alarm.

11. The alarm can be acknowledged by pressing:

12. Alarms must be acknowledged before the normal monitoring screen can be displayed.

13. Acknowledged alarm messages are displayed with a grey background.

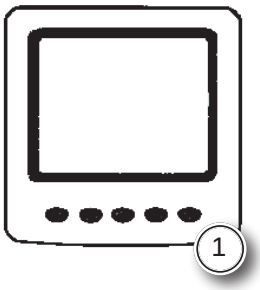
14. Alarm messages can also be displayed at any time from the normal monitoring display by pressing button twice.

15. To return to the monitoring screen press:

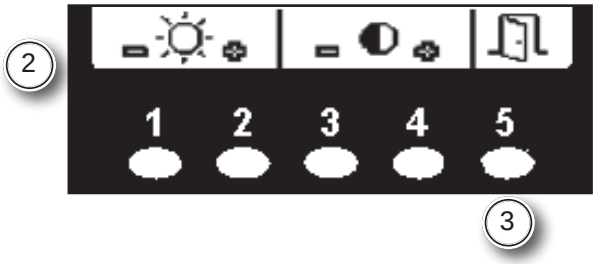
Configuration Options

Screen Brightness and contrast

1. Press button 5 briefly when the normal monitoring screen is being displayed, not when the menu icons are displayed. Do not hold down button.



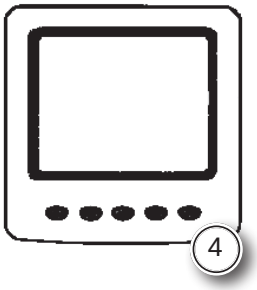
2. Adjust the screen using buttons 1 to 4.



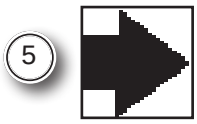
3. Press button 5 to exit

Settings Menu

4. Press and hold button 5 for 3 seconds, when the normal monitoring screen is being displayed.



5. Scroll to point to settings and select by pressing:



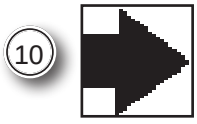
6. The following options can then be selected:

7. Units - metric or imperial

8. Language - select from list

9. Bleep - button press sound on or off

10. Set the options for each of these by pressing:



11. Return to previous screens by pressing:

12. To return to the monitoring screen press:

Engine Warning Lamps

1. Engine alarms will also make amber warning and diagnostic lamp flash or illuminate continuously.

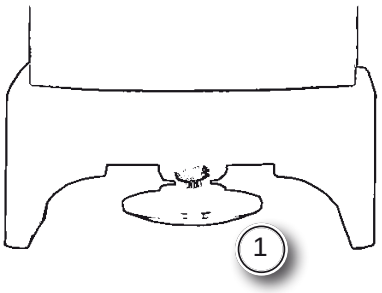
2. A red stop lamp may also flash or illuminate continiously.

3. Refer to the operation section of the engine manual for information of these lamps.

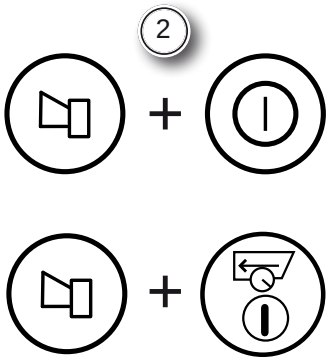
14 EN ‘860’ Radio Remote Control

Operation [if fitted]

1. To switch on the control, pull the stop button out.



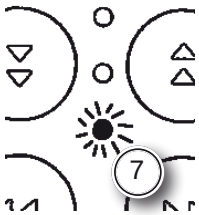
2. To enable the radio remote control to be used, press both of the safety buttons at the same time for at least 1 second and a red light will illuminate. Release the safety buttons and it will change to green.



3. To switch off the control, push in the stop button when the plant is not set to radio mode or is not operating.
4. To conserve the battery charge the hand set should be switched off when not in use.
5. Store the control in a dry, secure place when not being used to prevent damage and unauthorised use.

Battery Recharging

6. The radio remote control has a built in NiMH battery and charging unit.



7. Battery charge status is indicated by the light in the transmitter:

   Red - battery needs charging

   Green - battery charged

8. The light on the hand set changes from green to red when there is about 3% power left in the battery, approximately 1 hour continuous operation remaining, and indicates it requires recharging.

9. The input charging point on the rear of the control can accept a charging voltage from either 12VDC or 24VDC systems.

10. A charging cable is supplied, suitable for plugging into a vehicle auxiliary or cigarette lighter point. Some plants have a 24V socket on the control panel.

11. Battery capacity is 2000mAh.

12. Charging time from completely empty battery is approximately 4 hours.

13. Operating time with fully charged battery is approximately 30 hours.

14. During the charging of the batteries the light will be red until changing to green when fully charged. The battery cannot be overcharged.

15. The plant warning horn will also sound when battery recharging is required.

Battery Replacement

1. The radio remote control contains rechargable batteries which are unable to be replaced, therefore the radio control should be recycled.

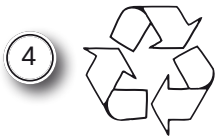
2. Contact your local Powerscreen® dealer or Powerscreen® technical support department for advice on recycling the radio remote control.

03

Battery Recycling

3. Do not dispose of the radio remote control or any old batteries with normal waste that may to go to landfill.

4. All batteries shall be disposed of correctly to be recycled at an approved treatment facility.



15 EN Engine Stop

Switching off engine

NOTICE

For normal closing down the plant, DO NOT use the emergency stop buttons [or, if fitted, radio remote control stop buttons] or by switching off the engine ignition to close down the plant. Always follow the correct preparation sequence.

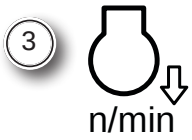
1. Observe all safety warnings.
2. Follow instructions to prepare to finish crushing or finish manoevring in moving the plant.

31 12

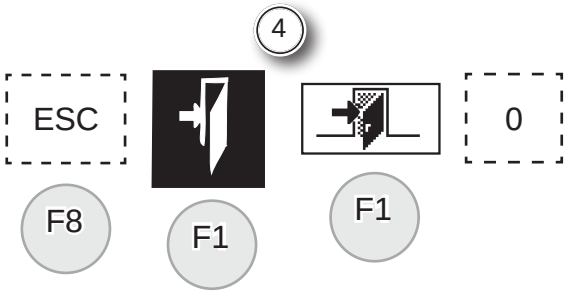
NOTICE

The feeder, crusher and conveyors must be stopped in sequence and emptied before the next section is stopped.

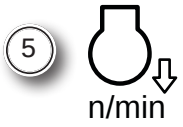
3. Plants with automatic engine speed control set the engine speed to its slowest speed when all plant components are switched off. Check the engine is running at its slowest speed.



4. Switch plant controls off if necessary by esc, exit or ‘0’, depending on the type of controls fitted.

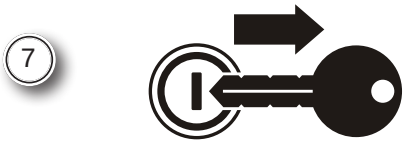


5. On plants with manual engine speed control, set the engine at its slowest speed.

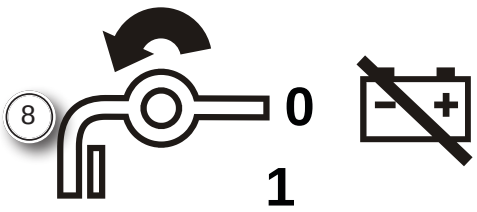


6. Let the engine idle with no load for 3 to 5 minutes.

7. Turn the ignition key to '0' to stop the engine then remove the key.



8. Set the the battery disconnect switch to ‘0’ and lockout.

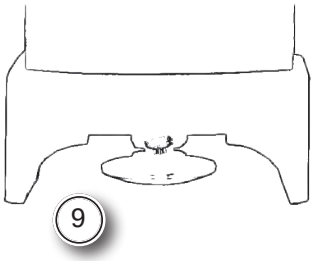


WARNING

Refer to Safety Notices Section for relevant warning and procedure

LOCKOUT
PLANT

9. If the radio remote control, if fitted, has been in use switch off by depressing the stop button.

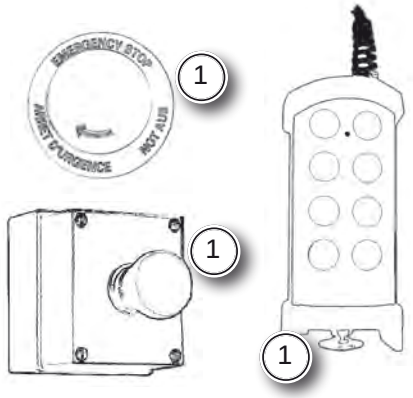


16 EN Emergency Stop

Emergency Stopping the Plant

IN AN EMERGENCY ONLY, STOP THE ENGINE AND PLANT OPERATION BY USING AN EMERGENCY STOP BUTTON

1. Pressing any of the emergency stops on the plant or umbilical control will stop the engine and plant.



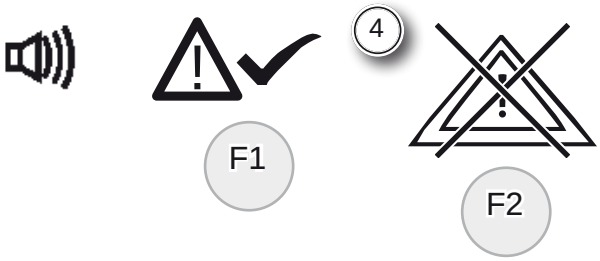
⚠ WARNING

The stop button on the remote radio control, if fitted, is NOT an emergency stop as it may not be operative at all times.

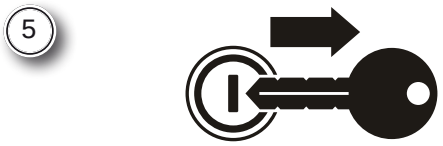
2. When the plant has been stopped using an emergency stop button the ignition switch stays on.

3. Emergency stop activation and alarm messages are shown on plants with a display, refer to plant alarms.

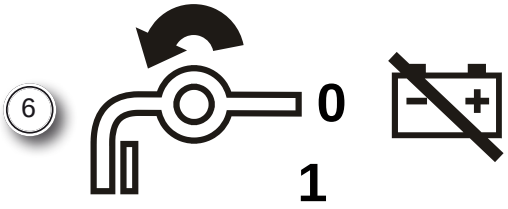
4. The safety alarm will sound until it is acknowledged and cancelled.



5. Turn the key off the 0 position as soon as possible and remove the key.



6. Set the battery disconnect switch off to the ‘0’ position.



⚠ WARNING

When an emergency stop has been initiated, DO NOT attempt to restart the engine until it is safe to do so.

NOTICE

The plant should not be re-started if the crusher is full of material.

Re-Setting Emergency Stops

7. The button will remain engaged until physically released by pulling or twisting, depending upon the type fitted.
8. The engine cannot be started if any of the emergency stops remain depressed.

Testing Emergency Stops

WARNING

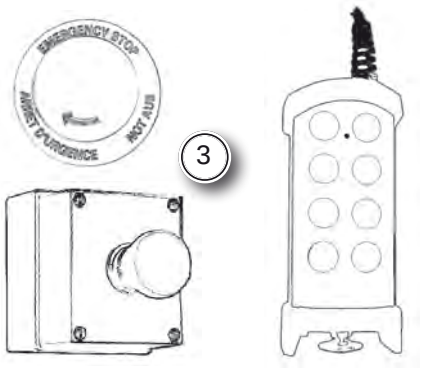
Daily, before commencing crushing operations, test each emergency stop button is operative.

1. Observe all safety warnings.

2. Start the engine, see engine starting.

13

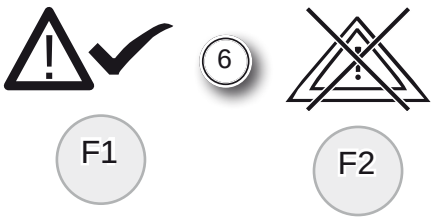
3. Push in an emergency stop on the plant or umbilical control and the engine will stop.



4. Alarm messages are shown on plants with a display.

5. The safety alarm will sound.

6. Acknowledge the alarm.



7. Re-set the emergency stop by pulling or twisting, depending on the type fitted.

8. Turn the key off the 0 position.

9. Turn ignition key to the first position again.

10. Wait for the pre-start warning to complete.

11. Turn ignition key to start the engine again.

12. Repeat the process for all other emergency stops.

17 EN Preparing to Crush

Plant Location Considerations

⚠ DANGER

The environment in which the plant will operate contains inherent health and safety risks, which the operator must take steps to avoid.

Dangers from overhead conveyor discharges, overspill material, vehicle movements, etc., as well as other site related hazards must be anticipated.

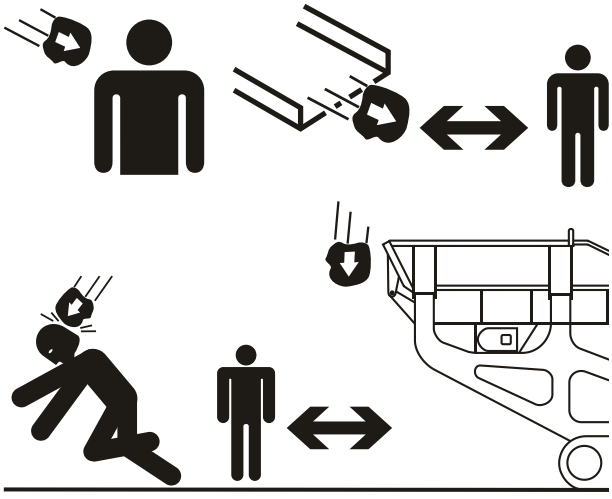
Avoid these by carrying out risk assessments before the plant is put into operation to ensure appropriate exclusion zone measures are put in place and site personnel safety awareness training has been undertaken.

Prior to setting up the plant, consideration should be given to a suitable layout to prevent oversize material or metal from entering the plant. In order to prevent bridging of the crusher no material above the size recommended should be fed into the plant.

Position the plant in a safe, level, operating position making sure both tracks are in full contact with the ground to minimise movement of the Plant. Regularly check the plant is level and stable.

Pay attention to access from the loading area and to where material is to be deposited.

Ensure the area under the tail drum of the product conveyor is free of large stones etc. which may cause damage to the belt.



Setting Up

1. Observe all safety instructions.

NOTICE

If the air inlet filter has been removed to obtain the minimum transport height, remove transportation cap and fit the air filter. Store the transportation cap in the toolbox.

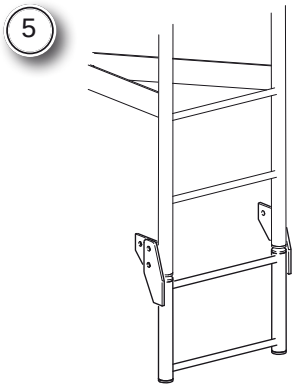
2. Start the engine, see engine starting.

13

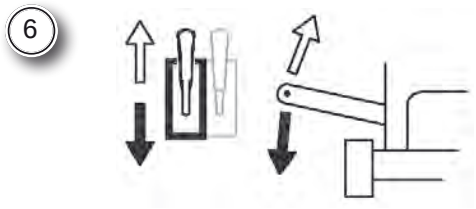
3. Leave the engine set at its slowest speed.

4. Release the dirt conveyor, if fitted, from the transportation securing system.

5. Unfold the maintenance platform ladder down and secure.



6. Use the hydraulic valve lever at the rear of the plant to fully unfold and lower the dirt conveyor into the working position.



NOTICE

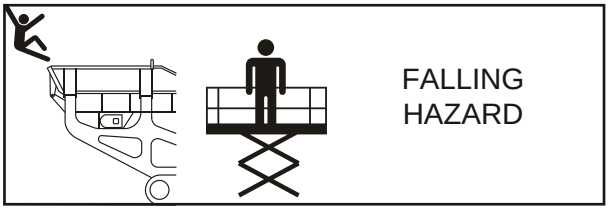
During lowering of the dirt conveyor ensure that the hydraulic hoses and conveyor belt are not entangled with any part of the plant.

Raising Hopper for Crushing

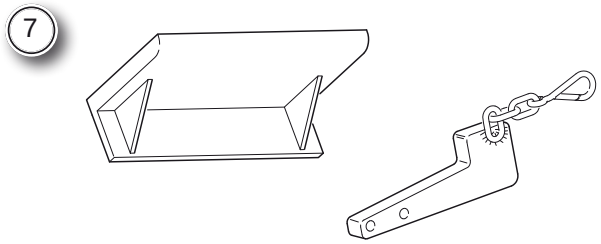
[Not applicable if a fixed hopper is fitted]

⚠ WARNING

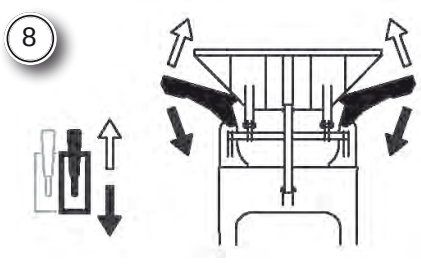
Refer to Safety Notices Section for relevant warning and procedure



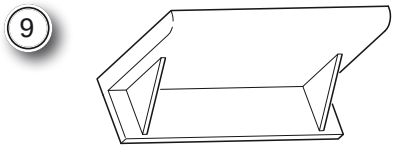
7. Take the hopper locking wedges from the toolbox and attach the side plate and corner wedges to the plant ready for use, using the clips and chains.



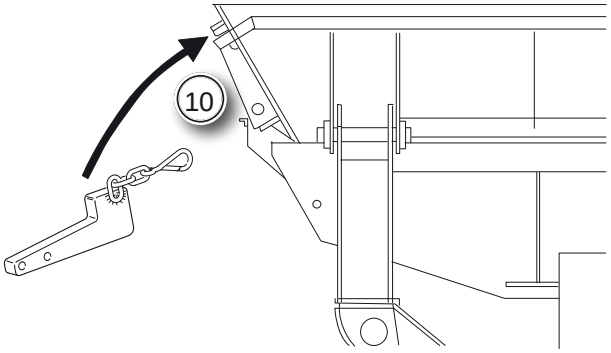
8. Use the hydraulic valve lever at the rear of the plant to fully raise both hopper side plates at the same time.



9. Lock the side plates into position using two locking wedges each side.



10. Using suitable lifting equipment, raise the hopper end plate and secure to the side plates using corner locking wedges.



⚠ WARNING

DO NOT attempt to fit any fasteners holding the manual folding hopper end plate until it is securely held by lifting equipment to prevent any movement.

Final Preparation

11. Stop the engine, refer to engine stop.

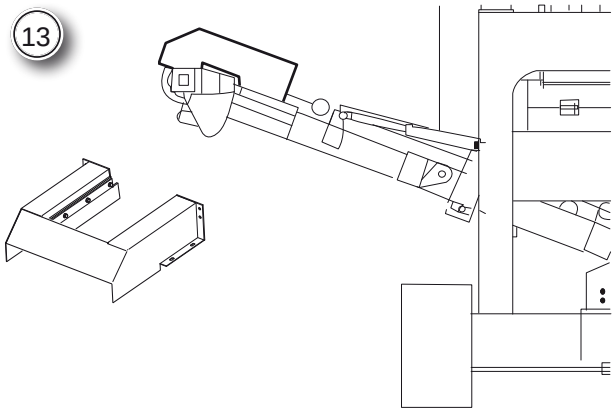
15

12. Lock out the plant.

WARNING

Refer to Safety Notices Section for relevant warning and procedure

13. If a dirt conveyor is fitted, fit the head drum guard.



18 EN Loading the Plant Hopper

Correct Loading of Hopper

1. Observe all safety warnings and notices.

2. Make sure all personnel are clear of the plant as described in plant location considerations, refer to preparing to crush.

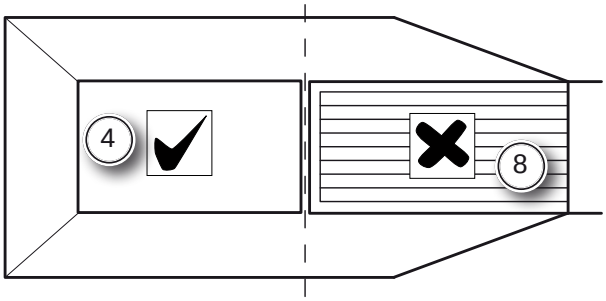
17

3. Material for crushing must be within the sizes specified in the crusher capacity of the plant, refer to specification and plant information.

04

4. Material for crushing must be fed into the rear part of the plant hopper on to the base plate designed for loading.

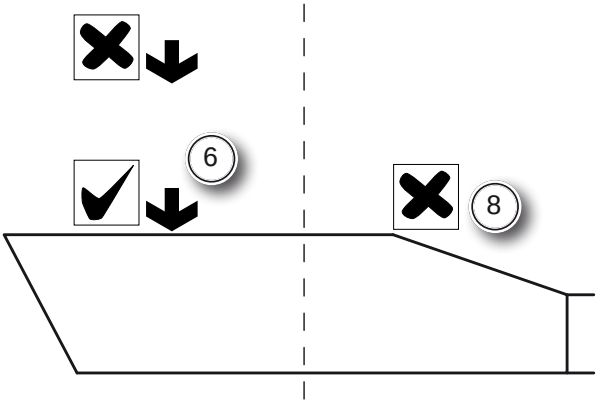
5. This method will allow feed material to pass over the feeder bars gradually to allow them to function correctly.



6. The feed bucket should pass as close as possible to the hopper top edge, just clearing the sides or end of the hopper.

7. Empty the bucket to drop material the minimum height into the hopper base plate.

8. Do not drop material on to the feeder bars as they are not designed for impact of material from a great height.



9. Load material into the hopper at a rate the feeder and crusher can work efficiently.

10. Set the feeder speed such that material is fed evenly and does not build up, refer to crusher operation. 20

11. Do not feed excess material into the hopper.

20 EN Plant Operation

Crusher Models

M.A. model - Manual Adjust Crusher

Shims clamped with a spring are used to provide different crusher discharge setting.

H.A. model - Hydraulic Adjust Crusher

Pressurised hydraulic rams are used to lock the crusher discharge setting under normal crushing conditions.

The crusher hydraulics provide a quick and easy operation when adjustment to the crusher discharge setting is required, either to compensate for wear on the jaws or to alter the product required.

⚠ WARNINGS

The M.A. model discharge setting has manual adjustment by shims, with assistance from a manual hydraulic system.

The H.A. model has discharge setting operated by a plant hydraulic adjust and locking wedge system.

The operation of the plant should be fully understood prior to starting it.

NOTICE

DO NOT feed non crushable material larger than the closed jaw discharge setting.

Plant Starting

⚠ WARNING

Ensure that all safety aspects are checked before starting the engine.

Before Starting

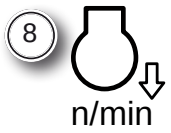
1. Ensure the full length of both tracks are in contact with a firm and level surface.
2. Check that the crushing chamber and feed hopper are empty.
3. Measure the crusher discharge opening and adjust if necessary.
4. Check that all guards are in position and secure.
5. Make sure all personnel are clear of the plant.

Product Conveyor and Magnetic Separator [if fitted]

6. Observe all safety warnings and notices.

7. Start the engine, refer to engine starting. 13

8. Set engine speed to low.



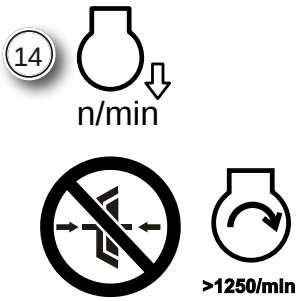
9. Set the mode switch to plant operation.

10. Set product conveyor switch to 1 to start the conveyor and, if fitted, the magnetic separator will also start.

11. A pre-start delay and an audible warning will sound before movement takes place.

Crusher

12. Observe all safety warnings and notices.
13. Check the product conveyor is operating.
14. Make sure the engine speed switch is set to low.



NOTICE

To avoid damage to the clutch, DO NOT increase the engine speed until after the crusher is running

15. Set the crusher switch to 1 to engage the clutch and drive the crusher.
16. A pre-start delay and an audible warning will sound before movement takes place.
17. When the clutch is fully engaged, the engine speed switch can be set to the working speed.
18. If there is a problem with the clutch hydraulic system, it will be indicated by a fault warning.

Dirt Conveyor Operation [if fitted]

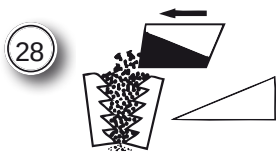
19. Observe all safety warnings and notices.
20 Visually confirm that the dirt conveyor [if fitted] has been lowered outward into its working position.
21. Check the product conveyor and crusher are operating.
22. Set the dirt conveyor switch to 1.
23. A pre-start delay and an audible warning will sound before movement takes place.

Feeder

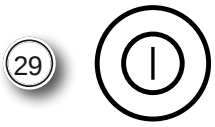
24. Observe all safety warnings and notices.
25. Check the product conveyor, crusher and dirt conveyor, if fitted, are operating.
26. The feeder controls are positioned separately to the other controls.

27. Set the feeder switch to 1.

28. The speed of the feeder will need adjusting, depending upon the type of material to be crushed, to maintain an even regular flow through the crusher. Use the Feeder Speed control knob to adjust to the required feed rate.



29. The feeder can be switched on and off remotely with the radio remote control, if fitted and selected, but the speed can only be adjusted by the feeder control on the plant.



NOTICE

The control valves mounted on the engine and beneath the feeder are NOT to be used in any circumstances to operate the feeder or conveyors. Manual over rides, where fitted to valves, are for test and fault finding only and are not to be used to operate any function of the plant while working.

Finishing Plant Start Up

30. Check that all items are running satisfactorily.
31. Ensure the plant is stable and without undue vibration. If necessary, reposition the plant on firm, level area with the full length of both tracks in contact with the ground.
32. Check all other aspects of the plant are ready for the introduction of material.

21 EN Plant Operation - Adjusting and Setting

Discharge Opening

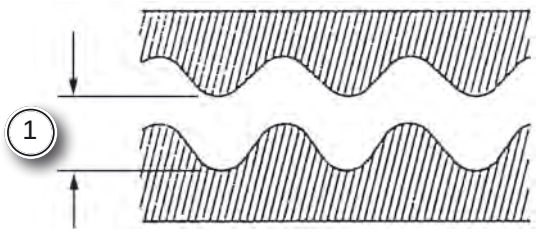
⚠ WARNING

Refer to Safety Notices Section for relevant warning and procedure

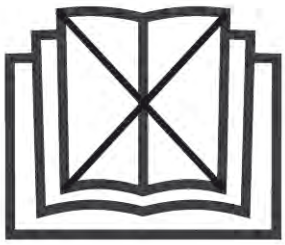
LOCKOUT
PLANT

Measurement

1. The discharge opening is the distance between the fixed and moving jaw plates at the bottom of the crushing chamber and regulates the size of the product material. The opening is measured from the top of the tooth on one jaw plate to the corresponding root between two teeth on the other jaw plate.

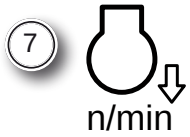


2. The opening should be measured when the eccentric shaft is at its highest point. The measurement should be made at a point of shortest distance between the two jaw plates, when the jaw is closed.



Adjusting Discharge Opening H.A. [Hydraulic Adjust model only]

3. Observe all safety warnings and notices.
4. Ensure the crusher is completely empty of material.
5. Measure the discharge opening.
6. Start the engine, refer to engine starting. 13
7. Set engine speed to low.
8. Set all switches to 0 position.



9. Set the mode switch to plant operation but DO NOT start the crusher.
10. Use the jaw adjustment switch to increase or decrease the discharge opening.

11. There will be a slight delay, for the locking mechanism to operate before the jaw moves.
12. There will also be a slight delay after setting the discharge opening, for the locking mechanism to operate, ready for crushing.
13. An audible warning will sound while the adjustment is made.

14. Do not set the jaw discharge opening less than the minimum in the rest position as given in the crusher specification.

 04

NOTICE

Fully open and close the jaw every week to keep the adjustment and locking systems operational.

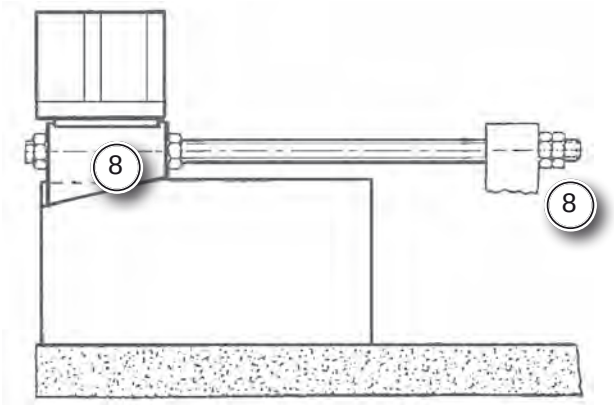
Adjusting Discharge Opening M.A. [Manual Adjust Model only]

1. Observe all safety warnings.
2. Ensure the crusher is completely empty of material.
3. Measure the discharge opening.
4. Run the plant until the crushing chamber is empty.
5. Close down the plant and implement the lockout procedure.

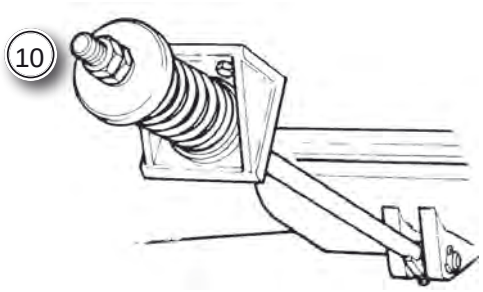
⚠ WARNING

Refer to Safety Notices Section for relevant warning and procedure

6. Thoroughly clean down the area on top of the rear cross beam and spacing shims to prevent debris from falling into the shim slot whilst carrying out the adjusting procedure.
7. Remove any dirt or burrs that may prevent the shims seating correctly.
8. Release the toggle beam locking wedges by unlocking and slackening the nuts.
9. Measure and note the compressed length of the tension rod spring.



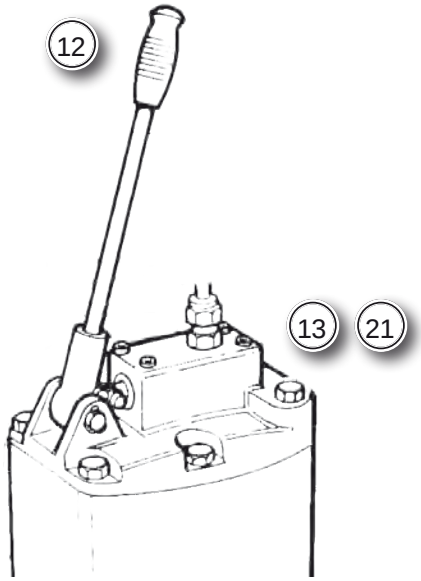
10. Slacken the locking nuts to release the compression on the spring but do not remove the nuts.
11. Adjustment to the crusher discharge opening is made by inserting or removing steel shims that are accessed from the back of the crusher. Shims of various thickness are supplied, some in the crusher and several spare.



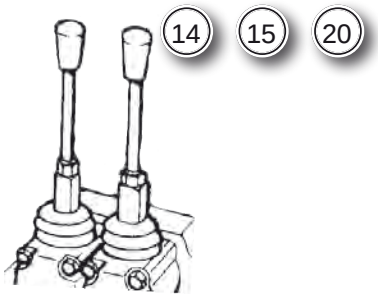
⚠ WARNING

Always lift the spacing shims by the lifting loops provided. Never allow hands inside the shim slot whilst changing the shims as accidental closure would result in serious injury.

12. To assist the process of making setting adjustments, a hand operated hydraulic ram system is fitted.
13. Close the pressure relief valve.



14. Push the valve lever forward of the central position and operate the hand pump to move the toggle beam forward to permit insertion or removal of shims as necessary.
15. Pull the valve lever backward of the central position and operate the hand pump to clamp the shims between the toggle beam and the main frame crossbeam.
16. Reset both the toggle beam locking mechanisms by tightening the clamping and locking nuts.
17. Compress the tension rod spring to the length previously noted. Do not over compress the spring.
18. Run the crusher empty. If 'knocking' is heard from toggle plate movement, stop the plant and lockout.
19. Increase the compression on the tension rod spring slightly. Repeat this until the crusher runs smoothly but do not over compress the spring.
20. Return the valve lever to the central position.
21. Open the pressure relief valve.



22 EN Plant Operation - Clearing Blockage

Clear Assist System H.A. [Hydraulic Adjust model only]

1. If the blockage has not been released by opening the jaw, operate the clear assist system for 5 seconds maximum.
2. Check again if this has allowed some possible movement of the jaw which has released the pressure on the blocking material.
3. If the blockage has cleared, start up the product conveyor to clear the material.
4. If the blockage has not cleared, try the clear assist system again. If the blockage has not cleared after 3 attempts, the blockage must be cleared by another method.
5. If the procedure is not successful, refer to separate section on clearing blocked jaw crushers.

32

Blocked Crusher H.A. [Hydraulic Adjust model only]

⚠ WARNING

Refer to Safety Notices Section for relevant warning and procedure

LOCKOUT PLANT

Blocked H.A. Crusher Procedure

6. If an oversize piece of material has caused the crusher to become blocked, it is possible the pressure will be sustained on the moving jaw. This pressure will need to be released under controlled conditions to enable safe removal of the material.

⚠ WARNING

Before any attempt to carry out the procedures to clear the crusher, the plant must be stopped and locked out. The safety grid at the mouth of the crusher must be securely fastened in place.

7. In certain circumstances it may be possible to release the pressure on the moving swing jaw by using the clear assist system.
8. Observe all safety warnings and notices.

9. Stop the plant and engine, refer to engine stop.

15

10. Lockout the plant.
11. Check that the material causing the blockage is made of crushable material.

12. Start the engine, refer to engine starting, but DO NOT start the crusher.

13

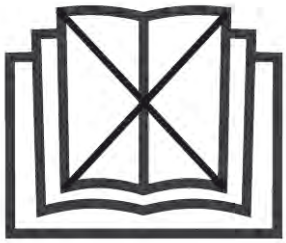
13. Use the jaw adjustment switch to open the jaw fully to release blocking material.

14. Refer also to adjusting discharge opening H.A..

15. Ascertain if this has allowed some movement of the jaw which has released the pressure on the blocking material.

16. If the blockage has cleared, start up the product conveyor to clear the material.

17. If the jaw will not move and open to release the blockage using the jaw adjustment switch, use the clear assist system.



Clearing Blocked Crusher M.A. [Manual Adjust model only]

⚠ WARNING

Refer to Safety Notices Section for relevant warning and procedure

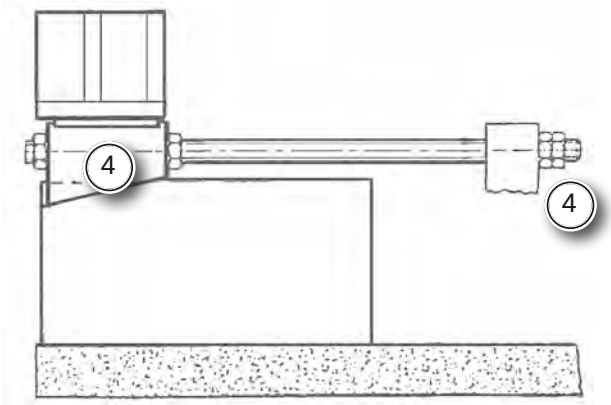
LOCKOUT PLANT

1. In the situation where an oversize piece of material causes the crusher to stall, it is possible the pressure will be sustained on the moving jaw. This pressure will need to be released under controlled conditions to enable safe removal of the material that has created the stall condition.

⚠ WARNING

Before any attempt to carry out the procedures to clear the stalled crusher it must be locked out and the safety grid at the mouth of the crusher must be securely fastened in place.

2. In certain circumstances it may be possible to release the pressure on the moving jaw by slackening off the toggle beam locking wedges which may allow the toggle beam to be raised sufficiently to allow the jaw to fall back by a small amount.
3. Observe all safety warnings.



4. Release the toggle beam locking wedges by unlocking and slackening the nuts.
5. Carefully ascertain if this has allowed some possible movement of the toggle beam, which has released the pressure on the blocking material.
6. If the procedure is successful and the blocking material removed, re-tighten the locking wedges before recommencing operation

7. If the procedure is not successful, refer to separate section on clearing blocked jaw crushers.

📖 32

23 EN Operation - Plant Alarms

Plant Diagnostic Lamp

The plant diagnostic lamp will flash to indicate the following faults.

Fault No.	Description	Action
1	Emergency stop fault.	Check all emergency stop buttons.
2	Radio stop fault.	Check the radio remote control is not selected and stop button pressed in.
3	Hydraulic fluid level low.	Check for leaks, rectify if necessary and top up.
4	Product conveyor speed low.	Check for a slipping belt [If a speed wheel is fitted].
5	Clutch operating pressure low.	#
6	Jaw cylinder pressure low. [Hydraulic adjust model only].	#
7	Function selected but not running.	Check non running functions are turned off to 0.
8	- - -	
9	- - -	
10	- - -	
11	C.A.N. block error.	#
12	C.A.N. bus error.	#
13	- - -	

= Contact your local Powerscreen® dealer or Powerscreen® Technical Support department for advice.

03

⚠ WARNING

Alarm messages without a suggested rectification or to rectify faults which require repairs or replacements of parts where specialist tools or expertise is required, contact your local Powerscreen® dealer or Powerscreen® Technical Support.

NOTICE

A fault must be rectified before crushing operations can be resumed.

24 EN Daily Plant Checks

Checks Prior to Daily Start

⚠ WARNINGS

It is imperative that the operator carries out regular and diligent checks before operating the plant, especially with operational safety in mind.

Always consider what particular safety hazards could occur at specific sites and eliminate them before commencing work.

While it may not be the operator's responsibility to perform servicing or mechanical maintenance, the operator must be thoroughly familiar with the plant and its proper care since their own safety is involved.

Plant

1. Observe all safety warnings.
2. Visually check and inspect all guards, covers and doors are in position and secure.
3. Check that all equipment and tools that are hazardous to operation are removed from the immediate site.

4. Perform all actions required in the lubrication schedule requiring a daily check or lubrication, refer to servicing - lubrication.

41

⚠ DANGER

DO NOT allow an excavator bucket feeding material into the hopper to pass overhead or near the plant operator.

⚠ WARNING

NEVER leave the plant unattended whilst it is in operation.

NOTICES

Check frequently the stability of the plant. The chassis SHOULD NOT bounce during operation.

DO NOT run the engine below its recommended working speed when crushing.

Check regularly that all cooler fans are running correctly and that dust/dirt has not built up in the fan and radiator or heat exchanger element. Overheating can occur if dust/dirt is allowed to build up. Clean out dust/dirt if necessary.

Avoid frequent starting and stopping of the plant unnecessarily, as it will cause damage to the plant and excessive wear.

5. Make sure all warning and safety signs are clean and visible, see plant specification and information for their positions.

04

6. Ensure that the crusher and the feed hopper are empty.

7. Check hydraulic oil level and filter condition indicators.

51

8. Visually check the hydraulic system for damage or leaks.

⚠ DANGER

Refer to Safety Notices Section for relevant warning and procedure

SKIN INJECTION HAZARD

Engine

1. Observe all safety warnings.
2. Refer to the engine manual for the daily checks required such as oil level and filters.

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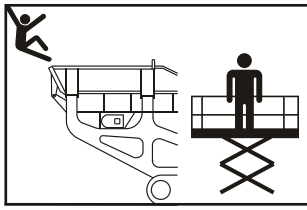
3. Check fuel level. 26
4. Check the hydraulic fluid filter condition indicators, if fitted. 51
5. Check coolant level when cold and top up as necessary, refer to engine manual and servicing - lubrication.

CATERPILLAR 41

6. Some plants are fitted with a coolant header tank for filling and topping up.
7. Some plants are fitted with an expansion bottle for topping up. If the expansion bottle is empty, first fill through the radiator filler then top up via the expansion bottle.

⚠ WARNING

Refer to Safety Notices Section for relevant warning and procedure



FALLING HAZARD

Tracks

8. Observe all safety warnings.

WARNING

Refer to Safety Notices Section for relevant warning and procedure

LOCKOUT PLANT

9. Close down the plant and implement the lockout procedure.
10. Check the track rollers and idler wheels for possible leakage.
11. Check the surface of the track, rollers, idler wheels, track shoes and drive sprockets for wear and loose mounting bolts.
12. Clean out any heavy build up of material from around the tracks.
13. Check the tension of the tracks, refer to servicing of tracks.

47

14. Check the track frames for any damage

Conveyors

15. Observe all safety warnings.
16. Check that all conveyor rollers are free to rotate.
17. Remove any build up of material on the plant chassis or framework below conveyors.

NOTICE

DO NOT allow a build up of material at the feed on points to any conveyor.

Other Plant Checks

18. General plant items should be inspected on a weekly basis and at 500 hour intervals for damage in the following areas:

    Main chassis.

    Feeder.

    Track frames.

    Conveyor frames.

25 EN Dust Suppression System

Dust Suppression System [if fitted]

1. The plant dust suppression is a plain water spray system with one inlet feeding separate circuits. The customer or user should provide the clean pressurised water supply.
2. The layout of the valves and pipe work varies on different type of plant.
3. Each circuit consists of spray bars each fitted with atomiser nozzles.
4. These are normally located in the following areas:-

    Crusher or impactor discharge area.

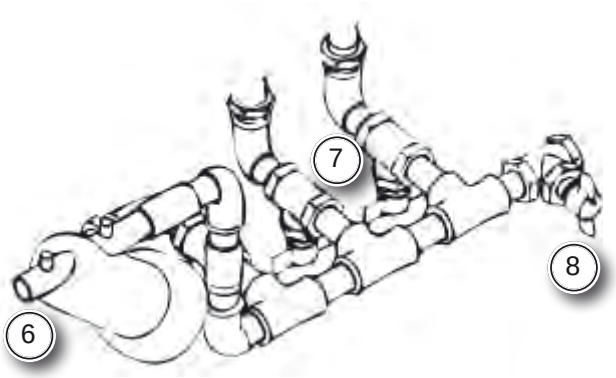
    Product conveyor discharge.

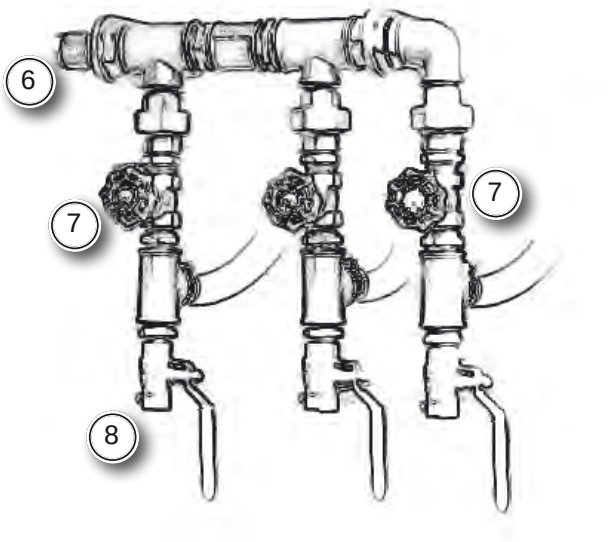
    Crusher feed,.

    Dirt conveyor, [not all plants].

5 The total flow requirement for the system is 25litres/min (6.6USgall/min) at a pressure of 2.8bar (42lbf/in²).

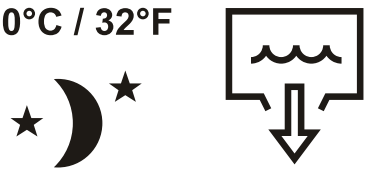
6. The system requires a clean pressurised plain water supply to the connection point.
7. Shut-off valves are provided for each spray bar circuit.





8. The water can be drained from the system using the drain valves located below the inlet. This is particularly important when there is the likelihood of the system freezing.

< 0°C / 32°F



NOTICE

Drain water from system when not in use, if there is a possibility of freezing.

9. All nozzles should be kept free of dirt and blockages.
10. Each nozzle should be checked every time the dust suppression is switched on.

Dust Suppression [if fitted]

26 EN Re-fuelling

Check Fuel Level and Fill Up

⚠ DANGER

Diesel fuel is highly flammable and is an explosion/burns hazard.

NEVER remove the filler cap or refuel, with the engine running.

NEVER add gasoline, petrol or any other fuel mixes to diesel because of increased fire or explosion risks.

DO NOT smoke while refilling or carrying out maintenance on the fuel system.

DO NOT carry out maintenance on the fuel system near naked lights or sources of sparks, such as welding equipment.

Fuel Sight Glass

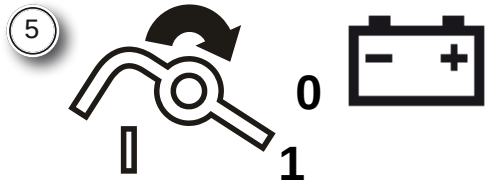
1. Some plants have a fuel sight glass for checking the tank level.

2. Check level and fill up with fuel, refer to fuel filling.

Fuel Gauge

3. Some plants have an electric fuel gauge.
4. Observe all safety warnings.

5. Turn the battery switch to the ‘1’ position.



6. Turn ignition to the ‘1’ position.
7. Check the fuel level gauge.
8. Turn ignition switch to ‘0’.

Fuel Filling

9. Clean the area around the fuel filler cap. On some plants the filler is located behind a door or panel. Some plants have an external fuel tank fitted with filler.

10. Remove the filler cap and fill up with fuel as required with specified diesel fuel. Refer to the engine manufacturer’s operation manual.

NOTICES

Do Not fill the tank to overflow or full capacity.

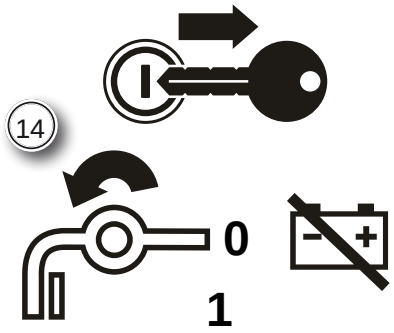
Allow room for expansion and wipe up spilt fuel immediately.

11. Preferably re-fuel at the end of each day where possible, to reduce overnight water condensation within the tank.

12. Replace the filler cap and close the door if applicable.

13. On plants fitted with an electric fuel gauge, switch on the ignition briefly to check the level, if required.

14. When finished, turn ignition switch to ‘0’ and remove key then turn the battery switch to ‘0’.



Fuel Transfer Pump

15. Some plants are fitted with an electrically operated pump, refer to addendum AM0009.

01 - AM0009

27 EN Feeder Stop and Start [‘860’ Radio Remote]

Radio Remote Control - Feeder Stop & Start, [if fitted]

1. Observe all safety instructions.

2. Set up the plant for operation in plant mode. Refer to specific plant controls. 17

3. Activate the radio remote control, refer to radio remote ‘860’. 14

4. Start the engine. Refer to specific plant and engine controls. 13

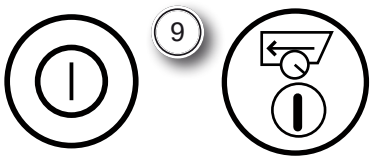
5. Prepare the plant for crushing. Refer to specific plant controls. 17

6. Switch on the conveyors, impactor or crusher and feeder at the plant controls. Refer to specific plant controls. 20

7. Set the desired feeder speed at the plant controls or set to automatic, depending upon the specific controls fitted to the plant. 20

8. The feeder speed on some plants can also be controlled with the radio, refer to feeder speed adjust ‘860’, if applicable. 28

9. Press the button to start and stop the feeder. Alternative icons are used on some plant controls.



31 EN Preparing to Finish Crushing

Normal Closing Down the Plant

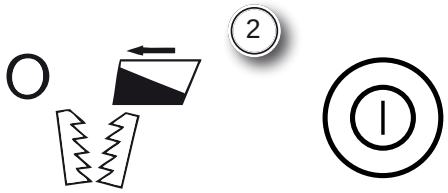
1. To finish crushing each section of the plant must be emptied in sequence before being stopped.

NOTICE

For normal closing down the plant, DO NOT use any emergency stop buttons, or radio control stop button if fitted, or by switching off the engine ignition. Always follow the correct closing down sequence to avoid premature failure or damage to plant components.

Always close down in the following sequence.

2. Wait until the feeder is empty of material then stop the feeder. Set the feeder off to 0 or, if fitted and being used, press the button on the radio remote control. Wait until the feeder has stopped before stopping the next item.



3. Wait until the dirt conveyor is empty of material then stop the dirt conveyor, if fitted. Set the dirt conveyor off to 0. Dirt conveyors are not fitted to all plants. Wait until the conveyor has stopped before stopping the next item

4. Set the engine to the slowest speed.

5. When the crusher is empty, set the crusher off to 0 to disengage the clutch. Wait until the crusher has stopped completely before stopping the next item.

6. After all materials have run off the product conveyor, set the product conveyor off to 0 to stop the conveyor and other equipment. Wait until the conveyor has stopped before stopping the next item.

7. Stop the engine as described in engine stop.

15

8. It is recommended that at the end of operation for the day the plant is routinely cleaned down and thoroughly examined to check for any damage, breakages, wear, leaks etcetera which should be rectified before further operation.

NOTICE

Use of high pressure washing equipment is to be avoided where the ingress of water will be detrimental to plant components. For example: crusher bearings, conveyor bearings, hydraulic tank, electrical equipment etcetera.

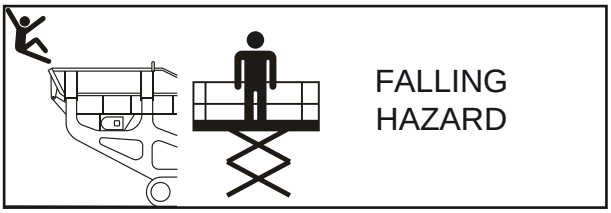
32 EN Clearing Blocked Jaw Crushers

Blocked Jaw Crusher

1. It is the responsibility of the owner, user and/ or safety officer of the plant to provide a safe means of dealing with oversize material and construct a safe procedure for unblocking a stalled crusher which is full of material.

⚠ WARNING

Refer to Safety Notices Section for relevant warning and procedure



⚠ WARNING

Unblocking stalled crushers can be hazardous. Do not undertake without careful risk assessment.

2. It will probably be necessary to conduct an adequate and appropriate risk assessment of the procedures for unblocking a blocked crusher to comply with local health and safety laws. Make sure you comply with any local laws applicable to such procedures.
3. Should an oversize piece of material be fed to a jaw crusher and cause the feed opening to be bridged the recommended procedure for removing this is to use a hydraulic arm. When a hydraulic arm is used no pressure should be put on the rock when the crusher is STATIONARY as this will cause premature failure of the bearings.
4. A crane and hook can be used although EXTREME caution must be exercised to ensure that the crane is not overloaded by trying to lift a jammed rock.

⚠ WARNING

The following methods of unblocking a crusher SHOULD NOT be attempted:-

DO NOT use wedges

DO NOT use mobile plant to drag stones out of the crusher or feeder

5. Under most arrangements pinch bars and hand hammers cannot be used safely. Their use should be limited to situations under risk assessment where there is every indication that they can be worked safely.
6. Once this has been decided it should be incorporated into a permit to work procedure to be issued by the manager. This system should cover things such as notification to the manager, isolation, methods of removal of excess stone, safe positions for personnel.
7. If the previous procedure fails to enable the stalling blockage to be removed, more complex methods may be required for which special training is required.
8. In the event of any problems these should only be dealt with by suitably experienced and qualified engineers.
9. For advice, contact your local Powerscreen® dealer or Powerscreen® technical support.

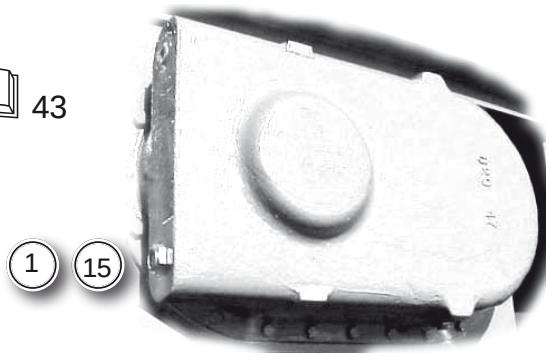
 03

33 EN Initial Checks - Running In

Initial Start-Up

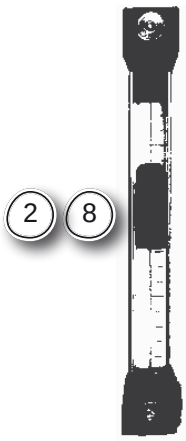
1. Check the oil levels in the vibrating unit oil baths.

43



2. Check the hydraulic oil level in the tank.

51



3. Refer to engine manual for initial start up of engine.

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4. Run the plant empty for a short period of time and check for abnormal noises, vibration or excessive heat from the shaft bearings.

NOTICE

Checks on the plant are crucial during the first week of operation.

This section should be read and understood prior to starting the plant. If there are any doubts, consult your local Powerscreen® dealer or Powerscreen® technical support.

03

Actions During Running-In Period

Plant

5. Each day during the initial days of operation check the tension of the conveyor belts: product conveyor, and dirt conveyor if one is fitted. 46
6. Frequently check the overall stability of the plant, re-position if necessary.
7. Check the plant is level, re-position if necessary.

8. Frequently check the hydraulic fluid level in the tank. 51

Crusher

9. On hydraulic jaw plants, regularly check the crusher slider pads for wear.

10. Check the alignment and tension of the vee belt drive daily during the initial days of operation. 45

11. Check the shaft bearing temperature daily using a contact thermometer and record for future reference and fault diagnosis. The maximum acceptable working temperature is 80°C (176°F).
12. Avoid overloading the crusher; restrict loading to 50% of full capacity on the first few days and increase gradually to full capacity when the crusher has been operating 60 hours.
13. Ensure that all drives are running before any feed is introduced to the plant and that the feed is maintained at a constant rate, irregular and excessive feed rates reduce the efficiency of the plant.

14. Check all liner fixings daily whilst liners settle in, when the plant is new or if the liners have been disturbed. This should be checked daily until no adjustment is required.
15. Ensure that all under size feed [smaller than the discharge setting] and oversize feed [greater that 80% of the feed opening] is removed prior to introduction into the crusher.
16. If the crusher has not been run for some time, re-grease all the crusher bearings then run empty for approximately 2 hours.

Feeder

17. Frequently check the oil levels in the vibrating unit oil baths.

43

18. After first 8 hours of operation, change the oil in the vibrating unit oil baths, see servicing vibrating feeder.
19. Check the vibrating unit bearing temperatures using a contact thermometer on the oil baths; record for future reference and fault diagnosis. Maximum acceptable temperature is 80°C (176°F).
20. Ensure that the vibrating feeder unit is operating before any material is introduced to the plant.

34 EN Jaw Crusher Checks

Jaw Crushers

1. Check discharge opening with callipers and adjust as necessary, to the required settings.

21

2. Check the jaw and side cheek securing nuts daily.

3. In high ambient temperatures, grease the jaw eccentric shaft, see servicing - lubrication.

41

Wear Checks

Jaw faces

60

4. Monitor the wear on the jaw liners from new and turn or renew them when 95% worn.

5. Monitor and check the wear of the jaw liners regularly.

6. DO NOT allow the jaw liners to wear below the bottom of the grooves. Any wear below this will result in the support block at the base being worn.

7. Continued crushing with heavily worn jaws increases the crushing forces and power consumption. This may limit the minimum setting on hard materials.

8. The jaws are double ended can be turned to use the other end, if one end has become worn. The worn area then being at the top of the crusher.

60

Toggle Plate and Seats

9. The toggle seats and toggle plate should be checked for wear as this can effect the operation of the spring system and in extreme cases cause the mechanism to fail [the greater the wear the closer the spring bracket gets to the jaw – collision could occur].

10. If inspection reveals the toggle plate and seats are worn then replacement is required. Do not modify the jaws or spring system to effect additional clearance as this may adversely effect the structural integrity of components leading to failure and loss of any warranty.

11. Specialist training and experience are required for this work, contact your local Powerscreen® dealer or Powerscreen® technical support for advice.

 03

HR - Hydraulic Release Jaw Crushers

Toggle Beam Slider Pads

12. In applications where the crusher is subjected to frequent overload release situations, wear on the slider pads may be accelerated.

13. Regularly check to make sure there is no rocking movement of the toggle beam. View through the chassis shim aperture guards whilst the crusher is running.

14. Excessive wear or damaged pads could result in movement of the toggle beam or cylinders in normal operation, which will result in further machine damage.

15. If the slider pads are worn, these should be replaced as soon as possible to prevent failure during crushing.

16. Specialist training and experience are required for this work, contact your local Powerscreen® dealer or Powerscreen® technical support for advice.

 03

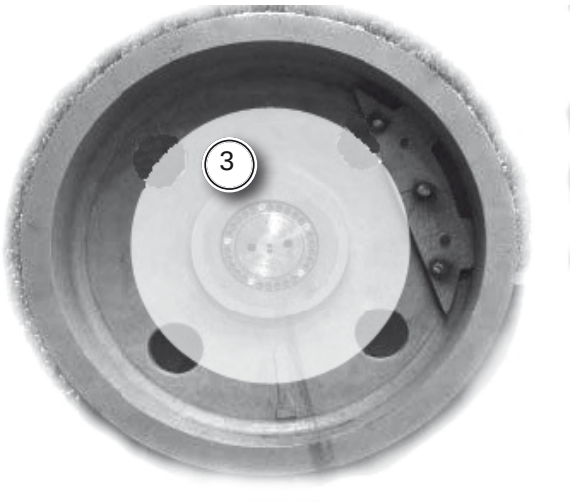
Routine Inspection Checks

Crushers should be inspected on a weekly basis and at 500 hour intervals for damage in the following areas:

1. Crusher body.

2. Wear Parts.

3. Flywheel[s] Area to inspect.



40 EN Servicing Safety and Precautions

Servicing Safety Information

⚠ WARNING

PRIOR TO ANY MAINTENANCE

The servicing instructions are intended for day to day checks and servicing to keep the plant in good running order. For all other maintenance issues, repairs or replacements of parts where specialist tools or expertise is required, contact your local Powerscreen® dealer or Powerscreen® technical support.

03

General Information

1. When performing servicing, always observe rules provided in the safety section.
2. Breakdown caused by insufficient or improper servicing will cause high repair costs and long term standstill. Therefore, regular servicing is imperative.
3. The reliability and life of the plant depends on regular and proper servicing.
4. The servicing instructions and schedules are for normal operating conditions.
5. For servicing where it is necessary to remove any guards, make sure that they are replaced before the machine is restarted.

NOTICE

When the plant is operated in extreme climatic conditions: below -15°C (5°F) or above 30°C (86°F) or in very dusty conditions for a longer period of time, the servicing schedules will change. Contact your local Powerscreen® dealer or Powerscreen® technical support department for advice.

03

Servicing Safety Precautions

6. Make sure that only suitably competent personnel with the necessary training/ experience for the task[s] in hand are employed.
7. A person should never work alone.
8. Observe the advice in the Safety Sections as appropriate to any task[s] undertaken.
9. Read the appropriate manual relevant to the operation in hand.
10. Carry out a risk assessment for all servicing operations.
11. Have suitable lifting equipment available for the components involved together with all necessary and suitable tools/equipment ready for the task[s] in hand and always secure parts liable to movement before starting work.
12. Powerscreen® technical support department is available for advice when required.
13. The plant should be completely emptied of all material.

 03

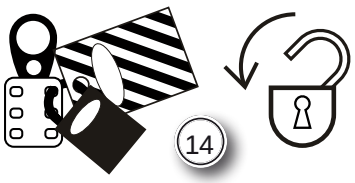
⚠ WARNING

Refer to Safety Notices Section for relevant warning and procedure

LOCKOUT
PLANT

14. Implement the lockout procedure and display a prominent ‘tag’ at the control station or other appropriate place to warn of work being carried out.

02



15. Keep clear of moving parts when trying to identify or isolate any unusual noises.
16. Fit dismantled parts in the same location from which they were removed.
17. Ensure that the area surrounding the servicing site is clear of any obstructions.

Welding on a plant fitted with an electronic controlled engine

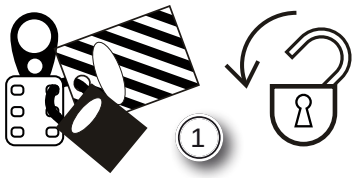
⚠ WARNING

Refer to Safety Notices Section for relevant warning and procedure

LOCKOUT
PLANT

1. BEFORE WORKING ON THE PLANT, SWITCH OFF, ‘LOCKOUT’ AND ‘TAG OUT’

02

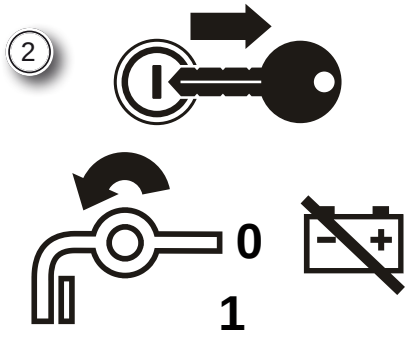


NOTICES

Before welding on a plant fitted with an electronic engine, these precautions shall be followed.

Refer also to welding instruction label inside the engine canopy.

2. Turn the battery disconnect switch off to the ‘0’ position and lockout.



3. Disconnect the battery ground negative [-] battery cable at the battery and at the battery disconnect switch.

4. Connect the welder ground cable clamp directly to the member to be welded as close as possible to the weld.
5. If arc-welding work is involved in any servicing operation, make sure that the current does not pass through any bearings, hydraulic components, electrical components and ground straps.
6. Do not use electrical components, the electronics control module or electrical ground stud for grounding the welder.
7. Protect any wiring and electrical or hydraulic components from welding debris or splatter.
8. Disconnect engine management system as described in the welding instruction label inside the engine canopy.
9. Use standard welding techniques to weld the materials together.

After Extensive Maintenance

Refer to initial checks - running in.

33

⚠ WARNING

PRACTICE SAFE MAINTENANCE

Understand service procedure before doing any work. Keep areas clean and dry.

Never lubricate, clean, service or adjust machine whilst it is moving.

Keep hands, feet and clothing clear of power driven parts and in-running nip points.

Disengage all the power and operate controls to relieve pressure. Stop the engine. Implement lockout procedure. Allow machinery to cool.

Securely support any plant or machine elements that must be raised for service work.

Keep all parts in good condition and properly installed. Attend to damage immediately. Replace worn or broken parts.

Remove any build up of grease, oil or debris.

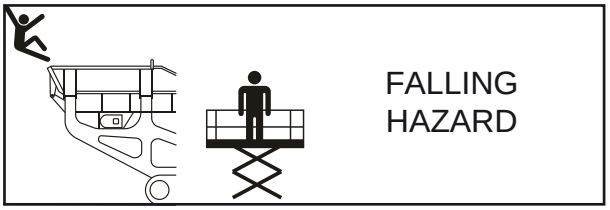
Disconnect battery ground cable, negative, [-] at the battery and the battery disconnect switch before making adjustments on electrical systems or welding.

41 EN Servicing - Lubrication and Checks

Lubrication Requirements

⚠ WARNING

Refer to Safety Notices Section for relevant warning and procedure



Regular Servicing

1. It is important that a strict routine of regular servicing is undertaken from the start of operation of the plant.
2. Regular checks on fluids and the lubrication of the plant, in accordance with the schedule, is essential.
3. In addition to the lubrication points, the lubrication schedule lists the regular attention required to the plant hydraulic system.

NOTICES

To deliver the specified quantity of grease to each of the four crusher eccentric shaft bearings, ascertain the amount the grease gun will deliver with each ‘pump’. Do not guess or assume an amount ! Check the greasing equipment used regularly.

Type ‘D’ grease used during manufacture is Fuchs Renolit EP2.

DO NOT use grease that contains molybdenum disulphide [MoS_2].

To prevent contamination of the grease, wipe the grease nipples clean before applying the grease gun.

4. Refer to Pegson lubricant and fluid specifications for all oil or grease and hydraulic fluid requirements.

42

NOTICE

DO NOT MIX OILS OF DIFFERENT MAKES OR TYPES

Lubrication and Hydraulic System Schedule

1. All hours stated are working hours for the component concerned.
2. This schedule is based on the plant operating 8 hours a day and 40 hours a week.

   Monthly = 160 hours

   Annually = 2000 hours

3. Adjust schedule to suit actual operating hours

4. Refer also to servicing jaw crushers. 44

Eccentric Jaw shaft	
Locations	4
Standard Lubrication:	
Below 35°C (95°F)	D
Quantity	72g (2.5 oz) each
Re-grease	Weekly
High Ambient Lubrication:	
Above 35°C (95°F)	D
Quantity	17g (0.6 oz) each
Re-grease	Daily

5. Feeder vibrating oil baths on both sides. Refer to servicing vibrating feeder.

43

Vibrating Hopper Feed Oil Bath	
Locations	2
Lubricant:	
Below 4°C (39°F)	A
4°C (39°F) to 15°C (59°F)	B
Above 15°C (59°F)	C
Quantity:	
Drive side	2.1 litres (4.5 US pints)
Non drive	1.7 litres (3.5 US pints)
Check sight glass and top up	Every day
Change oil	Every 200 hours

6. Product conveyor head and tail shaft bearing grease nipples located each side of the conveyor. Refer to servicing conveyors.

46

Product Conveyor Shafts	
Locations	4
Lubricant	D
Re-grease	Every 2 weeks

7. Dirt conveyor, if fitted, head and tail shaft bearings, two being on one side of the chassis below the feeder. Refer to servicing conveyors.

46

Dirt Conveyor Shafts [If fitted]	
Locations	4
Lubricant	D
Re-grease	Every 2 weeks

8. Magnetic separator, if fitted. Refer to servicing magnetic separator.

Magnetic Separator [If fitted]	
Locations	4
Lubricant	D
Re-grease	Every 2 weeks

WARNING

The belt magnet assembly is very powerful and permanently charged. The strong magnetic field produced could affect heart pacemakers, watches, credit cards, mobile phones etc. The operator has the sole responsibility to keep anyone at risk clear of the plant.

Persons with medical implants which may be affected by the magnetic field should keep a minimum of 3m (10ft) away

9. Track gearbox, refer to servicing tracks

Track gearbox	
Locations	2
Lubricant:	
Type A gearbox	K
Type B gearbox	Q
Approximate Quantity [±10%]	5 litres (1.3 US gal)
Change oil	After first 100 hours
Check and top up	Every 100 hours
Change oil	Every 1000 hours
Change oil	Annually
[Hours worked by Tracks]	

10. Clutch bearing, also refer to servicing clutch. Type A clutch is fitted to this plant.

Clutch Bearing	
Lubricant	P
Check and top up	At initial 100 hours
Re-grease	Every 500 hours
Purge old grease and replace	Every 3000 hours
Approximate quantity	128g (4.5oz)
[Bearing carrier 50% full]	

11. The engine also requires servicing which is detailed in the separate engine manufacturer's manual.

Engine	
Lubricating oil and filters	See engine manual
Fuel and filters	See engine manual
Coolant:	
Also see engine manual	E.L.C.*
Coolant Extender:	
Also see engine manual	E.L.C.* Extender
*E.L.C. = Extended Life Coolant	

12. Periodically lubricate hinges, cylinder pivot pins and similar points with oil or grease to prevent seizure during lengthy spells of inactivity.

13. Hydraulic system and filters, also refer also to servicing hydraulic system.

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Hydraulic Reservoir	
Quantity	360 litres (96 US gallons)
Fluid:	
Temperature Below 30°C (86°F)	F
Temperature Above 30°C (86°F)	G
Check and top up	Every week
Change fluid	2000 hours
Change fluid	Annually

Suction Filter and Return Filter	
Check	Each week
Renew	When indicator shows red
Renew	Every 1000 hours

Track Tension	
Track Tension	D, E or H

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Hydraulic Jaw Adjustment Check [H.A. model only]

1. To keep the jaw adjustment and locking system working correctly, it is preferable not to leave the system in a fixed position for long periods.

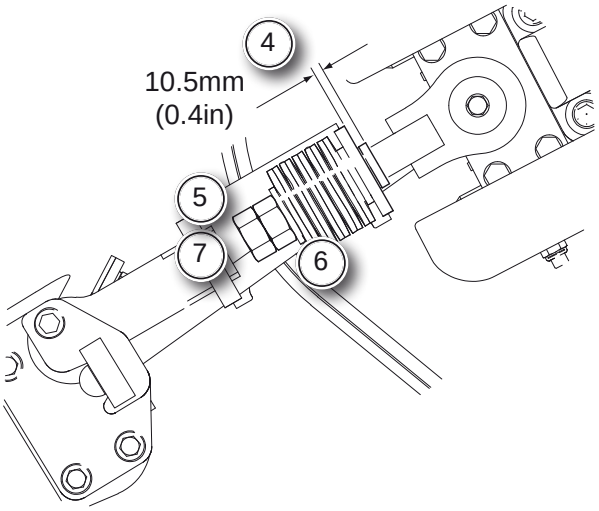
2. To check the operation, fully open and close the jaw each week to keep the adjustment and locking systems operational.

21

Toggle Plate Springs Check [H.A. model only]

3. As the toggle plate and locations wear the pre-loading springs may require adjusting.

4. Every month check the dimension of the protruding collar is correct as shown.



5. If adjustment is necessary slackening the lock nut.
6. Adjust the nut to obtain the correct dimension.
7. Lock the nuts to secure the setting.

Ambient Temperature Variations

1. The type of lubrication oil and hydraulic fluids in the following parts of the plant are dependent upon the ambient operating temperature.

2. Temperatures shown are defined as a daily ambient temperatures which are consistently below the figure stated or a daily ambient temperatures which are consistently above the figure stated.

NOTICE

Jaw Crusher Lubrication in High Ambient Temperatures

Where the plant is working for extended periods in ambient temperatures in excess of 35°C (95°F), the greasing of the four jaw crusher eccentric shaft bearings must be increased in frequency and the quantity revised as shown in the schedule.

Low or High Ambient Temperatures

3. Contact your local Powerscreen® dealer or Powerscreen® Technical Support department for advice if in doubt.

03

42 EN Pegson Lubricant and Fluid Specifications

Lubricant Oil Specifications

Oil Specification Grade A
ISO VG150 EP

Flashpoint: Minimum	199°C (390°F)
Pour Point	-18°C (-0.4°F)
Kinematic Viscosity at:	
40°C, mm²/s (104°F, in²/s)	150 (0.232)
100°C, mm²/s (212°F, in²/s)	15.4 (0.0238)
Viscosity Index	105+
Timken OK lb. Minimum	50
Extreme Pressure Agent	Yes
R & O Agent	Yes
Anti Foaming Agent	Yes
Copper Strip Corrosion Test Pass	Yes

Suppliers

Shell	Omala 150
Century	Centlube E76
Mobil	Mobilgear 629
Esso	Spartan EP150
Gulf	EP LUB MULTI H
BP	Energol GR-XP150

Oil Specification Grade B
ISO VG220 EP

Flashpoint: Minimum	204°C (399°F)
Pour Point	-18°C (-0.4°F)
Kinematic Viscosity at:	
40°C, mm²/s (104°F, in²/s)	220 (0.341)
100°C, mm²/s (212°F, in²/s)	20.1 (0.0312)
Viscosity Index	105+
Timken OK lb. Minimum	50
Extreme Pressure Agent	Yes
R & O Agent	Yes
Anti Foaming Agent	Yes
Copper Strip Corrosion Test Pass	Yes

Suppliers

Shell	Omala 220
Century	Centlube F76
Mobil	Mobilgear 630
Esso	Spartan EP220
Gulf	EP LUB HD220
BP	Energol GR-XP220

Oil Specification Grade C
ISO VG460 EP

Flashpoint: Minimum	216°C (421°F)
Pour Point	-18°C (-0.4°F)
Kinematic Viscosity at:	
40°C, mm²/s (104°F, in²/s)	460 (0.713)
100°C, mm²/s (212°F, in²/s)	32.9 (0.051)
Viscosity Index	105+
Timken OK lb. Minimum	50
Extreme Pressure Agent	Yes
R & O Agent	Yes
Anti Foaming Agent	Yes
Copper Strip Corrosion Test Pass	Yes

Suppliers

Shell	Omala 680
Century	Centlube H76
Mobil	Mobilgear 634
Esso	Spartan EP460
Gulf	EP LUB HD460
BP	Energol GR-XP460

Oil Specification Grade K	
Specification	API GL-5
Gear oil	SAE 80w/90

Oil Specification Grade R	
Shell	Omala 100
BP	Energol GR-XP 100

Oil Specification Grade L
ISO VG150 with EP additives

Oil Specification Grade S	
Shell	Omala 68
BP	Energol GR-XP 68

Oil Specification Grade N
SAE 30 - SAE 40
ISO VG 100 - ISO VG 150
[DO NOT use synthetic oil]

Oil Specification Grade T	
Viscosity Index	195
Viscosity at 50°C (122°F)	5.3
Texaco	Rando HD-CZ 68

Oil Specification Grade Q	
Specification	API GL-4
Gear Oil	SAE 90

Oil Specification Grade X	
Specification	API GL-5
Gear oil	SAE 85w/140

Grease Specifications

Check the grease to be used is to the correct specification, do not assume a general reference or name used by a supplier will conform to the required specification.

Grease Specification Grade D	
NLGI Grade Number	2
DIN Classification	DIN 51 825 KP 2 K-20
ISO Classification	ISO 6743-9 L-XBCEB-2
Unworked Penetration at 25°C (77°F)	280
Worked Penetration at 25°C (77°F)	285
Drop Point	185°C (365°F)
ASTM Corrosion Test Pass [14 days]	Yes
Wheel Bearing Test Pass at 135°C (275°F)	Yes
Timken Test [lb] Pass	40/50
Extreme Pressure Agent	Yes

NOTICE

GRADE D

DO NOT use grease that contains molybdenum disulphide [MoS_2].

Use ONLY a grease with lithium or lithium complex soap containing extreme pressure additives and having a base oil viscosity of 220 Cst at 40°C (104°F) / 17 Cst at 100°C (212°F) suitable for an operating range of -20 to +120°C (-4 to 248°F).

Grease Specification Grade P	
NLGI	2
Soap base	Lithium
Temperature Range	-20 to +120°C (-4 to 248°F)
Viscosity	<150cSt - 40°C (104°F)
Speed Factor	>200.000
Duty	Heavy
Castrol	Spheerol EPL2
Shell	Albida LX
Kluber	Centoplex 2EP
FAG	Arcanol L135V

Grease Specification Grade H	
Shell	Retinax EP2

Grease Specification Grade M	
NLGI Grade Number	3 Medium/Heavy Duty
Penetration at 25°C (77°F)	220/250
Temperature Range	-20 to 200°C (-4 to 392°F)
Drop Point	None
Water Resistance	Complete
Chemodex	Moly-Bentone MP

NOTICE

GRADE M

For cone crusher wedge rings, this grease MUST be used

Grease Specification Grade U
General Purpose grease containing Molybdenum Disulphide [MoS_2]

Grease Specification Grade W	
NLGI Grade Number	3
DIN Classification	K3K-30
Thickening Agent	Lithium soap
Drop Point	182°C (360°F) minimum
Worked Penetration	220-250
Temperature Range	-30 to +125°C (-22 to 257°F)

NOTICE

It is bad practice to mix greases. The blend can have a lower specification than the individual greases and can lead to premature bearing failure. USE ONE BRAND ONLY.

It is the operators responsibility to ensure that all bearings are greased with the correct quantity and type of grease at the correct intervals specified.

Hydraulic Fluid Specifications

Hydraulic Fluid Specification Grade E

ISO VG 32

Kinematic Viscosity at:	
40°C mm²/s (104°F, in²/s)	32 (0.049)
100°C mm²/s (212°F, in²/s)	5.5 (0.085)
Viscosity Index	95+
Rust Inhibitor	Yes
De-foament	Yes
Anti Scuff	Yes
Suppliers	
Shell	Hydra 37 or Tellus 37
Mobil	DTE24
Century	Centraulic PWLA
Esso	Nuto H32
Gulf	Hydrasil 32
BP	Energol HLPP-HM32

Hydraulic Fluid Specification Grade F

ISO VG 46

Kinematic Viscosity at:	
40°C mm²/s (104°F, in²/s)	46 (0.0713)
100°C mm²/s (212°F, in²/s)	6.5 (0.010)
Viscosity Index	95+
Rust Inhibitor	Yes
De-foament	Yes
Anti Scuff	Yes
Suppliers	
Shell	Hydra 46 or Tellus 46
Mobil	DTE25
Century	Centraulic PWLB
Esso	Nuto H46
Gulf	Hydrasil 46
BP	Energol HLPP-HM46

Hydraulic Fluid Specification Grade G

ISO VG 68

Kinematic Viscosity at:	
40°C mm²/s (104°F, in²/s)	68 (0.105)
100°C mm²/s (212°F, in²/s)	8.5 (0.013)
Viscosity Index	95+
Rust Inhibitor	Yes
De-foament	Yes
Anti Scuff	Yes
Suppliers	
Shell	Hydra 69 or Tellus 69
Mobil	DTE26
Century	Centraulic PWLC
Esso	Nuto H68
Gulf	Hydrasil 68
BP	Energol HLPP-HM68

Hydraulic Fluid Specification Grade J

ISO HM 32

Shell	Tellus 32
Mobil	DTE 24
Esso	Nuto H32
BP	Energol HLP-32

Hydraulic Fluid Specification Grade V

Shell	Donax TD

43 EN Servicing Vibrating Hopper Feeder

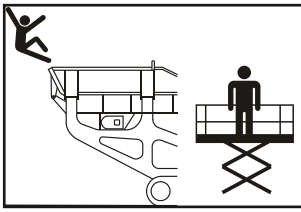
Vibrating Hopper Feeder - Servicing

1. After the initial 8 hours of operation, renew the oil in the feed hopper vibrating unit oil baths.

⚠ WARNING

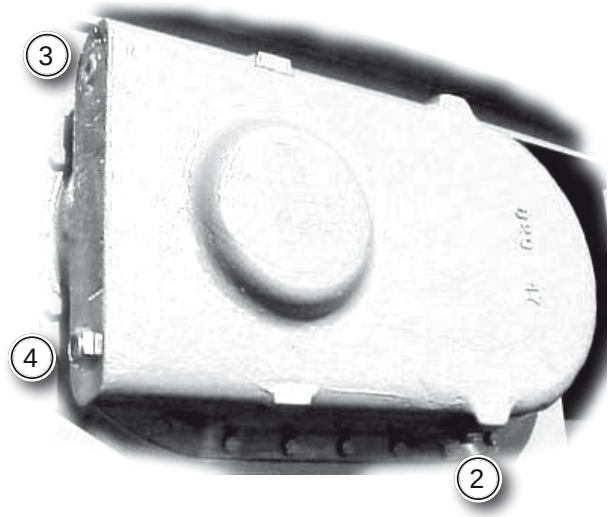
Refer to Safety Notices Section for relevant warning and procedure

LOCKOUT PLANT



FALLING HAZARD

2. Unscrew the plug to drain oil from each oil bath. Re-fit plug to seal.



3. Fill each oil bath with suitable oil, see servicing - lubrication plus lubricant and fluid specifications.

41 42

4. Oil should be level with the line on sight glass.

5. Always check the oil level before starting the plant.
6. The vibrating feeder must be regularly inspected for any wear, damage or breakage with the mainframe and support springs being paid particular attention. Rectify any faults immediately.
7. Make sure that the feeder can vibrate freely without fouling against the adjacent hopper or chute work and that any hardened material inside the pan is not allowed to build up and affect the performance of the plant.
8. Check to ensure that the hydraulic drive is operating efficiently.
9. Check the condition of the bars for both wear and build up of material and rectify if necessary.
10. Check the vibrating unit bearing temperatures using a contact thermometer on the end covers; record for future reference and fault diagnosis. Maximum acceptable temperature is 80ºC (176°F).
11. Check the security of all fasteners on the vibrating feeder and any bolted sections of the feeder bars.

44 EN Servicing Jaw Crusher

Jaw Crusher Lubrication

⚠ WARNING

Refer to Safety Notices Section for relevant warning and procedure

LOCKOUT PLANT

1. The lubrication of the eccentric shaft and jaw bearings varies in frequency and amount of grease depending on the ambient temperature. It is important that the crusher eccentric shaft is greased at the correct intervals, refer to servicing - lubrication.

41

2. Use the correct grease only, not a mixture, refer to lubricant and fluid specifications.

42

3. Contact your local Powerscreen® dealer or Powerscreen® Technical Support department for advice if in doubt.

03

4. Access to the eccentric shaft is from the maintenance platform.
5. Lubricate the jaw bearing at the grease nipples.
6. Lubricate the shaft bearings at the grease nipples.

45 EN Servicing Vee Belts

General

⚠ DANGER

Refer to Safety Notices Section for relevant warning and procedure

ENTANGLEMENT HAZARD

1. The Vee belt drive is a highly efficient power transmission medium, but optimum performance will not be achieved without correct tensioning and alignment.
2. Vee belt drives are used on the plant between the engine and the crusher and also to drive the hydraulic pumps on some plants.
3. Drive belts should be inspected regularly for wear and also to monitor any pattern in the wear if it is occurring.
4. Insufficient belt tension will cause slippage leading to loss of drive efficiency, heat generation and belt failure.
5. Over tensioning will exert excessive loading on the shaft bearings and can lead to premature failure.
6. When replacing a multi-belt drive always use a set of ‘matched’ new belts so that equal force can be applied to all the belts.
7. Ensure that any ventilation provided in the drive guarding is kept clear to avoid overheating.
8. Do not allow contaminating material to come into contact with the drive elements.

⚠ WARNING

Refer to Safety Notices Section for relevant warning and procedure

LOCKOUT PLANT

⚠ WARNING

Do not inspect or carry out work on belt drives before closing down the plant and implementing the Lockout Procedure. Never operate the plant without effective drive guarding in place.

Alignment

9. It is important to align the pulleys, otherwise the belt flanks will wear quickly.

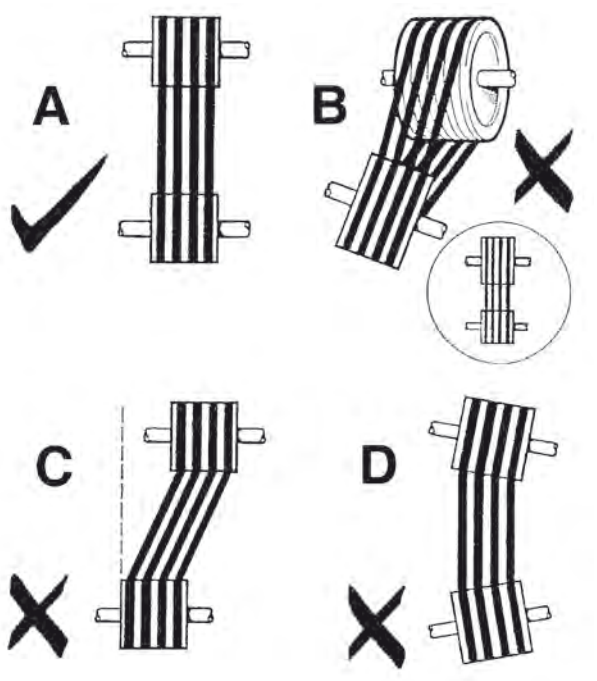
10. Ensure axis are parallel when viewed from all planes.

A - Correct installation, both shafts and pulleys are parallel and in alignment.

B - Incorrect, shafts are parallel from above but not from end view.

C - Incorrect, shafts are parallel and in alignment but pulleys are not in alignment.

D - Incorrect, shafts are not parallel to one another when seen from above.



Adjustment

DANGER

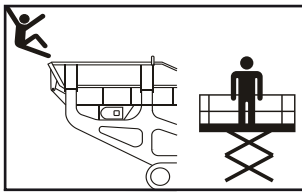
Refer to Safety Notices Section for relevant warning and procedure

ENTANGLEMENT HAZARD

WARNING

Refer to Safety Notices Section for relevant warning and procedure

LOCKOUT PLANT



FALLING HAZARD

1. Belt adjustment is by means of adjusting screws to increase or decrease the distance between the shaft centres. Locknuts on the tension screws must be tight whilst running the plant.
2. Drives tensioned horizontally have a sliding base frame with four clamping bolts which must be tight whilst running the plant.
3. Drives tensioned vertically have the moving power pack base frame mounted on four adjusting screws which must have all the locknuts tight whilst running the plant.
4. Some plants with vertical tensioning have a hydraulic assisted system, refer to hydraulic assisted belt tensioning.
5. Adjust each screw only to a limited extent at a time and by equal amounts to ease the movement of the base frame.

Manual Adjustment

6. Observe all safety warnings.

7. Close down the plant and implement the Lockout Procedure.

8. Remove guarding as necessary to gain access to the Vee belt drive and tensioning elements.

9. Mark or measure the existing position, assuming correct alignment, of the moving frame at each tension screw.

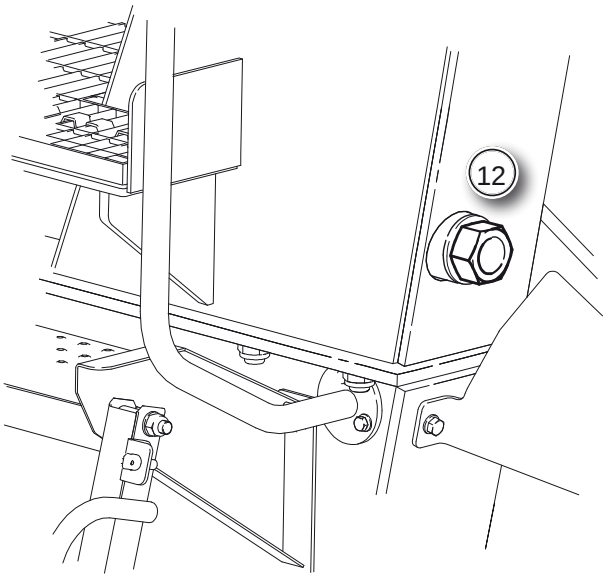
10. Loosen the clamping bolts securing the moving base frame [horizontal drives].

11. Undo locknuts on the tension screws to allow the base frame to be moved in the required direction.

12. On the Pegson XH250, XH320 and XH320SR the two adjusters are positioned as shown and do not have locknuts.

13. Either by turning a nut on the screw or the screw itself, depending on the type, tension or slacken the drive belts as required. Make an equal amount of adjustment to each screw.

02



14. To establish correct belt tension, use the method described in ‘drive belt tensioning’.

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⚠ DANGER

Under no circumstances should any check on the belt tension be made whilst the machine is running. There is an entanglement hazard and risk of trapping parts of the body.

15. Use the marks or measurements made before adjustment to ensure that the correct pulley alignment has been restored.

16. Tighten all locknuts and/or clamping bolts.

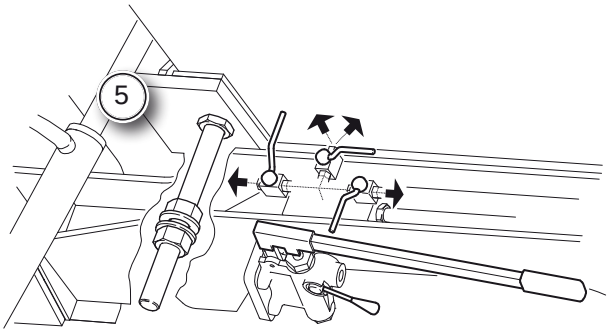
17. Ensure that all the drive guarding is replaced and secured before start the plant.

Vertical Belt Adjustment - Hydraulic Assisted, [only fitted to some plants]

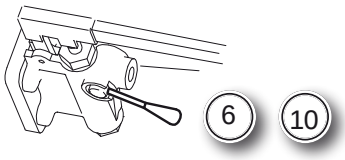
1. Observe all safety warnings.
2. Close down the plant and implement the lockout procedure.

02

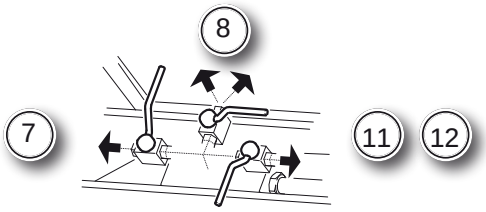
3. Remove guarding as necessary to gain access to the Vee belt drive and tensioning elements.
4. Mark or measure the existing position of the moving frame at each tension screw, assuming the frame is correctly aligned.



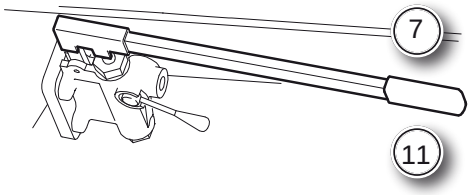
5. The hand operated hydraulic pump and controls are positioned under the engine and frame.
6. Set hydraulic direction control to up.



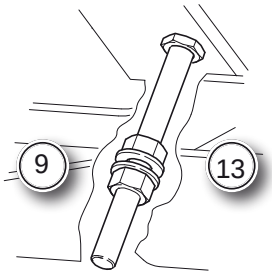
7. Open each of the three valves in turn and operate the pump to raise each cylinder and take the weight of the engine and frame off the nuts.
8. The centre valve operates two cylinders at the belt end.



9. Release the appropriate locking nuts on the support studs to enable the frame to be raised to tighten the belts or lower to slacken.
10. Set the hydraulic direction control as required to raise or lower.
11. Open each of the three valve in turn and operate the pump to move the frame a little at a time and keep it level.



12. Close all valves when in the final level position to maintain the position.
13. When the belts are tensioned correctly, tighten all the locking nuts.



Replacement

14. The Vee belts must be of the same type, size, and number to those originally fitted and specified.

15. Before fitting new belts, check the pulley grooves are free from score marks or sharp edges. Also check the grooves for wear. Ensure the pulleys are tight on their shafts.

16. If replacement of the belts is necessary due to premature failure, the cause should be investigated and rectified before fitted new belts. Refer to servicing vee belts, fault finding.

 ~>

17. The drive centre distance must be reduced prior to installation so that new belts can be fitted without the use of force.

18. Under no circumstance must belts be prised into the grooves as belts and pulley grooves can be damaged by using sharp tools to stretch the belts over the pulley rim.

19. The procedure for fitting new belts is generally the same as described for belt adjustment except it is necessary to slacken off the drive enough to remove the old belts and fit the new without damage. It may also be necessary to remove more of the guarding to gain access.

Drive Belt Tension

1. Observe all safety warnings.
2. Close down the machine and implement the Lockout Procedure.
3. Remove the guards from around the belt.
4. Calculate the deflection distance in mm (or inches) on a basis of 16mm (0.6in) deflection per 1 metre (1 yard) of belt span.

   METRIC: Centre to Centre Distance in metres x 16 = Deflection in mm.

DANGER

Refer to Safety Notices Section for relevant warning and procedure

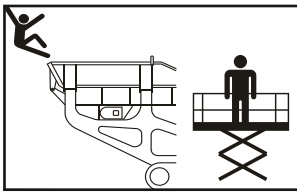
ENTANGLEMENT HAZARD

WARNING

Refer to Safety Notices Section for relevant warning and procedure

5. If a belt tension indicator is available:
   a. Set the lower marker ring at the deflection distance required on the lower scale.
   b. Set the upper marker ring against the bottom edge of the top tube.
   c. Place the belt tension indicator on top of the belt at the centre of the belt span, and apply a force at right angles to the belt deflecting it to the point where the lower marker ring is level with the top of the adjacent belt.
   d. Read off the setting force value indicated by the top edge of the upper marker ring.
   e. Compare this value to the value shown in the table.

LOCKOUT PLANT



FALLING HAZARD

DANGER

Under no circumstances should any check on the belt tension be made whilst the machine is running. There is an entanglement hazard and risk of trapping parts of the body.

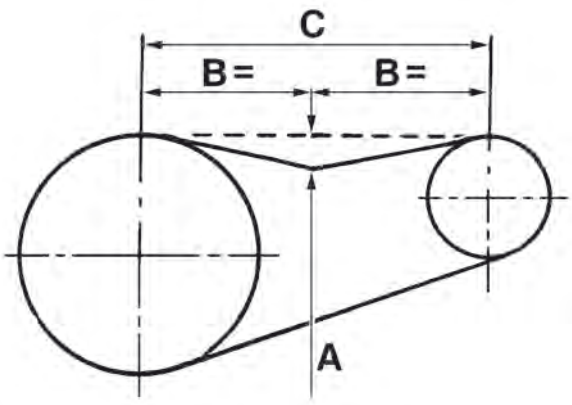
6. If a belt tension indicator is not available:

   a. Use a spring balance to pull the belt down at the centre of the span.

   b. When the belt has been pulled down [measure using a rule] by the deflection calculated in step 4, read off the force from the spring balance.

7. If the measured force falls within the values given, the drive should be satisfactory. A measured force below the lower value indicates under-tensioning. Some new drive belts are tensioned to the x1.25 Setting Force value to allow for the normal drop in tension during the running-in period. This is not recommended for all belts.

8. Replace all guards before start-up.



Belt Tensioning Measurements

A - 16mm deflection per metre (0.6in per 3ft).

B - Belt tension indicator applied to mid-span.

C - Centre to centre distance.

[x1] BASIC SETTING FORCES

SPB BELT SECTION

Small Pulley Diameter:

112 to 160mm (4.4 to 6.3in)	4.0kgf (8.8lbf)
170 to 224mm (6.7 to 8.8in)	5.1kgf (11.2lbf)
236 to 355mm (9.3 to 14.0in)	6.3kgf (13.9lbf)
Over 355mm (14in)	6.6kgf (14.6lbf)

SPC BELT SECTION

Small Pulley Diameter:

224 to 250mm (8.8 to 9.8in)	7.1kgf (15.7lbf)
265 to 355mm (10.4 to 14in)	9.4kgf (20.7lbf)
Over 375mm (14.8in)	12kgf (26.5lbf)

[x1.25] BASIC SETTING FORCES

If recommended for new belts

SPB BELT SECTION

Small Pulley Diameter:

112 to 160mm (4.4 to 6.3in)	5.1kgf (11.2lbf)
170 to 224mm (6.7 to 8.8in)	6.3kgf (13.9lbf)
236 to 355mm (9.3 to 14.0in)	7.9kgf (17.4lbf)
Over 355mm (14in)	8.3kgf (18.3lbf)

SPC BELT SECTION

Small Pulley Diameter:

224 to 250mm (8.8 to 9.8in)	8.9kgf (19.6lbf)
265 to 355mm (10.4 to 14in)	11.8kgf (26lbf)
Over 375mm (14.8in)	15kgf (33.1lbf)

NOTICE

After the drive has been running for 15 to 20 minutes, the plant should be stopped and the tension checked. If necessary, re-adjusted to the basic setting force value by repeating the above procedure from step 1.

Fault Finding

Small Cracks on V-belt side and Base

Generally caused by shortage of belt tension but excessive heat and/or chemical fumes can also give same failure.

Vee Belt Swelling or Softening

Caused by excessive contamination by oil, certain cutting fluids or rubber solvent.

Whipping During Running

Usually caused by incorrect tensioning, principally on long centre drives. If a slightly higher [or lower] tension does not cure the problem there may be a critical vibration frequency in the system which requires rectification.

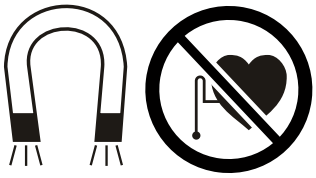
Consult your local Powerscreen® dealer or Powerscreen® Technical Support department.

 03

46 EN Servicing Conveyors

Magnetic Separator [if fitted]

1. The self cleaning suspended magnet utilises a two pulley design. The tail pulley has adjustment available to take up belt stretch and for tracking purposes.



⚠ WARNING

The belt magnet assembly is very powerful and permanently charged. The strong magnetic field produced could affect heart pacemakers, watches, credit cards, mobile phones etc. The operator has the sole responsibility to keep anyone at risk clear of the machine.

Persons with medical implants which may be affected by the magnetic field should keep a minimum of 3m (10ft) away

Training of Belts

2. Before starting the conveyor, it is essential to check the following.

3. The conveyor is straight and correctly levelled.

4. The head and tail drums are correctly fitted. i.e. They are level, and that their axes are square to the centre line of the conveyor.

5. All trough type and parallel idlers are correctly fitted with their axles square to the centre line of the conveyor, the side roller lead is in the correct direction [i.e. forward of centre] and all rollers are rotating freely.

6. In the case of screw-type take up gears, that these are adjusted initially to take up slack from the belt and that equal tension is applied to each side such that the pulley is square to the centre line of the conveyor.

7. Where skirt rubbers are fitted they are not bearing down heavily on the belt.

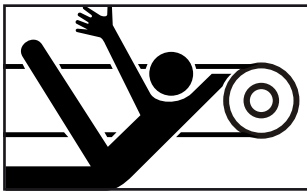
8. There is no obstruction on the conveyor that could cause accident or damage when the conveyor is started.

9. Tracking should be carried out with the belt empty. With very stiff belts, which do not trough well nor make proper contact with the centre idlers roller when empty, it may only be possible to track the return strand when empty and the troughed side when loaded.

10. If the belt tends to run to one side the most likely cause of the trouble will usually be some distance before the point where the running off is apparent, and in the case of troughed strand probably at the second or third idler behind the point where the belt is moving out of its true line.

⚠ DANGER

Refer to Safety Notices Section for relevant warning and procedure



ENTANGLEMENT HAZARD

⚠ WARNING

Refer to Safety Notices Section for relevant warning and procedure

LOCKOUT PLANT

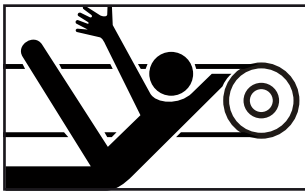
⚠ DANGER

Under no circumstances should any adjustment be made on the belt whilst the machine is running. There is an entanglement hazard and risk of trapping parts of the body.

Conveyor Belt Tensioning

DANGER

Refer to Safety Notices Section for relevant warning and procedure



ENTANGLEMENT HAZARD

1. Conveyor belts are tensioned by a pair of screw type mechanisms located on either side of the conveyor.
2. Best practice is to tension each side a little at a time and by the same amount until the belt is tensioned. When tensioned, the drum must be square to the conveyor frame.
3. The correct tension is achieved when the drive drum starts the belt and keeps it running when loaded without any slip occuring.
4. The tension adjusting screws should be kept clean and well oiled.

WARNING

Refer to Safety Notices Section for relevant warning and procedure

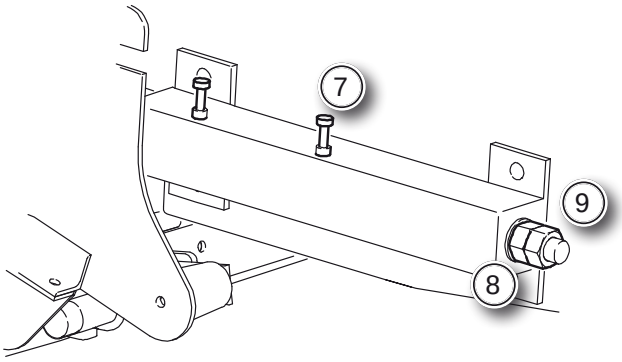
LOCKOUT PLANT

DANGER

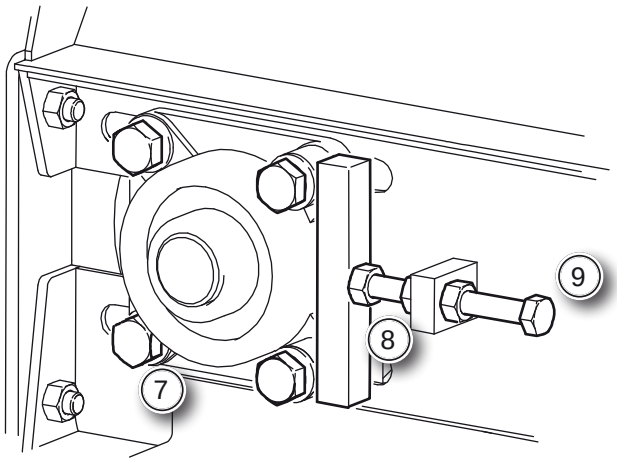
Under no circumstances should any adjustment be made on the belt whilst the machine is running. There is an entanglement hazard and risk of trapping parts of the body.

5. Observe all safety warnings.
6. Close down the plant and implement the lockout procedure.

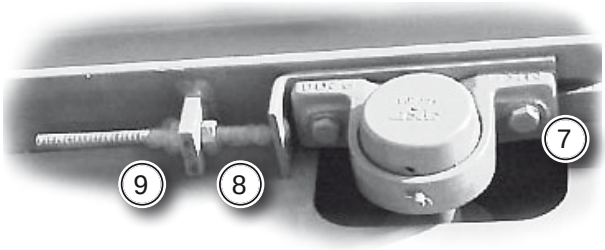
7. Loosen any screws used to clamp the tensioning mechanism or securing a sliding bearing.

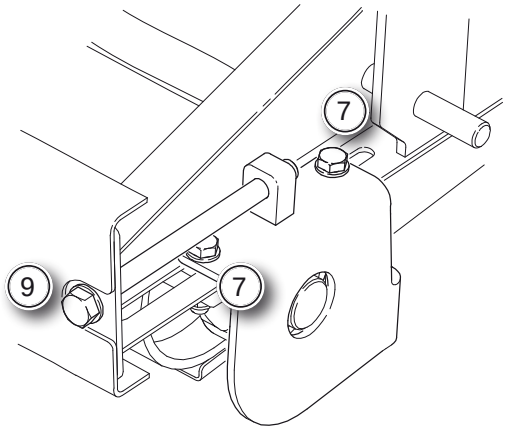


8. Loosen the screw tension lock nuts. where fitted.



9. Either by turning a nut on the screw or the screw itself, depending on the type, tension or slacken the belt as required. Make an equal amount of adjustment to each screw.





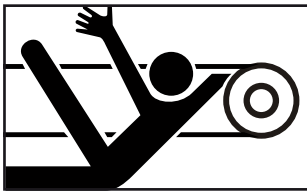
10. Once correct tension has been achieved, tighten the lock nuts and clamping nuts.

Inspection of Conveyors

1. The following checks should be made regularly in order to keep the conveyors in good working order:
2. Observe all safety warnings.
3. Close down the plant and implement the lockout procedure.
4. Ensure that central feed onto the conveyor belt is maintained at all times and that the belt at the point of feed is kept straight and central at all times.
5. Inspect the skirt plate sealing strips and ensure that they are adjusted close enough to the belt to prevent spillage or material jamming between the seals and the belt, but at the same time not bearing hard on the belt.

⚠ DANGER

Refer to Safety Notices Section for relevant warning and procedure



ENTANGLEMENT HAZARD

⚠ WARNING

Refer to Safety Notices Section for relevant warning and procedure

LOCKOUT PLANT

6. Check that the belt generally is running centrally and straight on both the carrying strand and the return strand. If not, refer to training of belts.

📖 <~

7. Inspect the condition of the conveyor belt regularly and arrange for the earliest possible repair of any damage which may have occurred as this can make a worthwhile extension of the useful life of the belt. Repair a cut or tear in the rubber by cleaning thoroughly and plugging with a rubber repair compound.

⚠ DANGER

Clip joints can be dangerous and should not be used. Belt repairs/replacements should be performed by vulcanising only.

8. Check that there is no evidence of belt slip at the driving drum, as belt slip will cause premature wear on the belt. Check also for undue sag between idlers. Both would indicate lack of belt tension, refer to conveyor belt tensioning.

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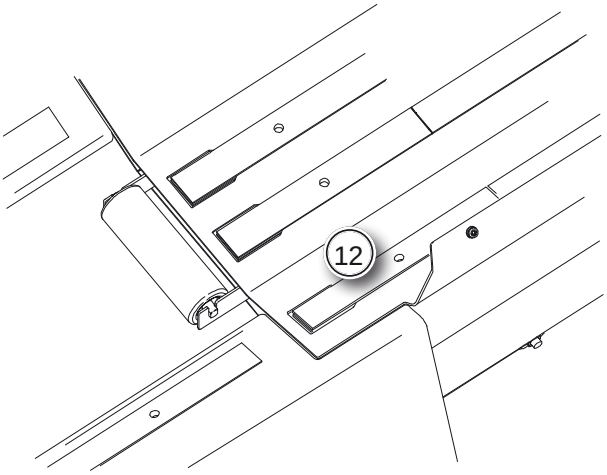
9. Check regularly that the idler rollers are rotating freely. If not either free them or replace the idler. Failure to do so will result in belt wear and tracking problems.

10. Check that the belt cleaning equipment is operating correctly and efficiently. In the case of scrapers ensure that they are not choked with a build up of material. Also check that the blades are not bearing on the belt any more than necessary, and that any blades which are unevenly worn or in a condition likely to cause damage to the belt are renewed immediately.

11. In the interests of efficient operation and general safety, it is important that operating conditions are kept as clean as possible and that any spillages are cleaned up regularly and are not allowed to build up.

12. Some conveyors are fitted with low friction strips under the belt. If the strips are fitted, check if they are worn down. Slide them out and turn them over for further use or renew as neccessary.



⚠ DANGER

As many inspections as possible should be made whilst the belt is stationary. When this is not possible extreme care should be taken when inspecting the belt whilst it is moving as there is an entanglement hazard and risk of trapping parts of the body.

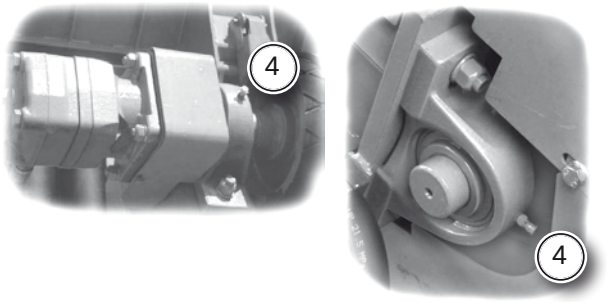
Lubrication

1. Lubricate the product conveyor tail section pivots, where fitted and dirt conveyor, if fitted, pivots.

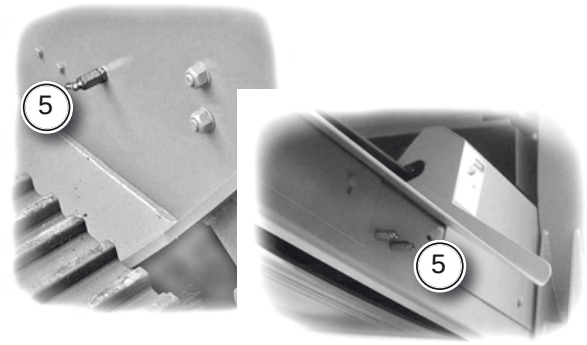
2. Refer to the plant specific schedule in servicing - lubrication. 41

3. Refer to lubricant and fluid specifications for the correct lubricants. 42

4. Grease the head and tail drum bearings of the conveyors as specified in the servicing - lubrication schedule.

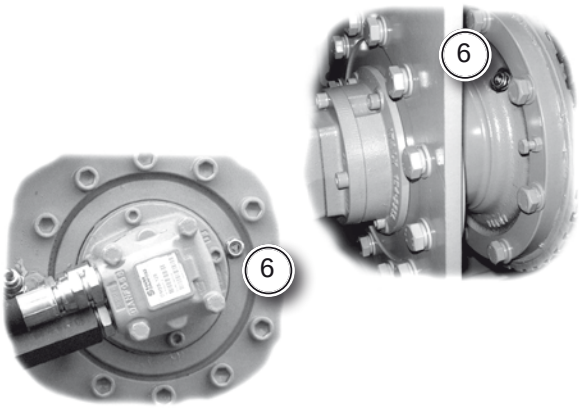


5. The grease nipples for some conveyors are place in more convenient positions remotely from the bearing.



6. Where the plant does not have a vibrating feeder but includes a feed conveyor with an oil lubricated speed reduction gearbox inside the head drum, refer to the plant specific schedule in Servicing - Lubrication.

Maximum gearbox oil temperature 90°C (194°F).



Cleaning Conveyor Belts

DANGER

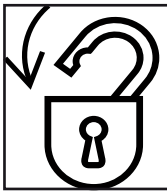
Refer to Safety Notices Section for relevant warning and procedure

ENTANGLEMENT HAZARD

7. If the conveyor belts are not properly maintained and skirting rubbers are not kept in correct adjustment, it may be necessary to remove resultant spillage material and / or blockages from the conveyor belts, particularly at the feed section.

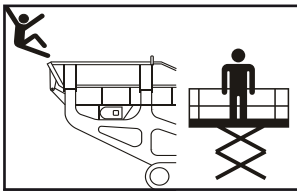
WARNING

Refer to Safety Notices Section for relevant warning and procedure



LOCKOUT PLANT

8. The plant should be switched off and isolated by means of the lockout and tag out procedure prior to the commencement of any work.
9. Use suitable personal protective equipment i.e. eye, foot, hand and head protection etc as may be required or necessary to undertake the task.
10. Gloves to protect the skin against abrasive materials, sharp surfaces, or penetration of the skin should be worn.
11. Goggles should be worn to protect eyes from fragments, particles and dust.
12. Not only the workers cleaning the belts but also others close by who may be affected, must also wear protective equipment.
13. Before commencing, make sure all procedures mentioned previously have been followed.



FALLING HAZARD

WARNING

It is important that these procedures are followed when cleaning the conveyor belts. Failure to follow these procedures can result in death or serious injury.

14. The conveyor belts can be cleaned using a number of methods, a water hose; a rod with scraper attached, or a brush or shovel.
15. In the case of a blockage at a drive or tail drum it may be necessary to loosen the tension on the conveyor belt so that the blockage can be removed. Re-tension and re-align the belt after blockage is removed.
16. When work is complete, make sure that all guards are closed or replaced and secured before re-starting the plant.

47 EN Servicing of Tracks

Plant Tracks

⚠ WARNING

Refer to Safety Notices Section for relevant warning and procedure

LOCKOUT PLANT

Keeping the track correctly adjusted will increase the service life of the track and drive components.

Frequently check for loose bolts, oil leaks, master pins are correctly located and tight, general wear and damage, correct track tension, etc. to ensure safe working and long life.

NOTICE

To maximise the life of the track, keep it movable and avoid damage, the plant should be moved at least every week, by a distance exceeding four times the track length. It should also be parked on level ground overnight and during periods to of non-usage. This is particularly important when working in adverse conditions.

It is essential that the tracks are correctly tensioned at all times. Check track tension regularly.

Moving the plant with incorrectly tensioned tracks can cause severe damage to the undercarriage components and may invalidate the warranty.

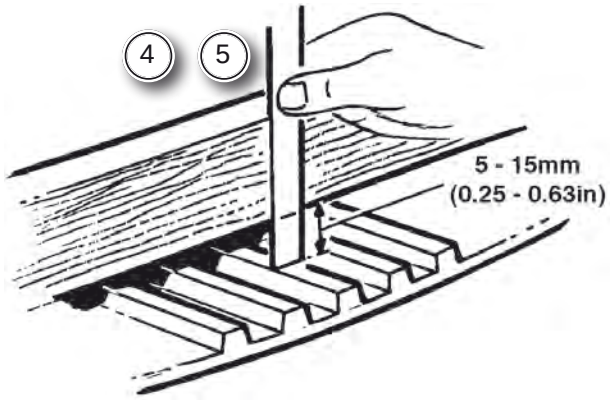
Measuring Track Tension

1. Observe all Safety Warnings.
2. Position the plant on solid and level ground and drive 2 metres (2 yards) minimum in a forward direction, track idler roller leading.

⚠ WARNING

Prior to attempting any manoeuvring of the plant the tracks must be free of obstructions, including crushed material and fines. Do not push or tow the plant. Failure to observe this warning could result in injury to persons and damage to the plant which may invalidate warranty.

3. Close down the plant and implement the Lockout Procedure.
4. One track at a time, measure the sag on the top part of the track on the longest section of unsupported track by placing a ‘straight edge’ long enough to reach from the drive sprocket to the nearest skid plate.
5. Measure the maximum amount of track sag from the high point of the track to the bottom of the ‘straight edge’. Correctly adjusted, the sag should be approximately 15mm (0.63in) but must not be less that 5mm (0.2in).



6. Depending upon the need to either slacken or tension the track, proceed as follows.

-->

Adjusting Track Tension

DANGER

Refer to Safety Notices Section for relevant warning and procedure

SKIN INJECTION HAZARD

WARNING

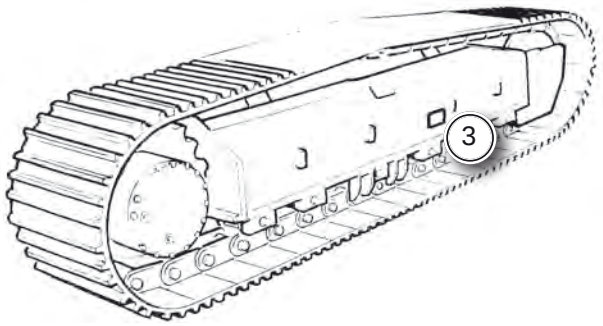
Refer to Safety Notices Section for relevant warning and procedure

LOCKOUT PLANT

WARNING

'GREASE UNDER HIGH PRESSURE'

1. Observe all Safety Warnings.
2. Close down the plant and implement the Lockout Procedure.
3. Locate the access aperture on the side of the track frame and remove the cover, where fitted, to reveal the relief valve inside.



To Release Track Tension [After measurement]:-

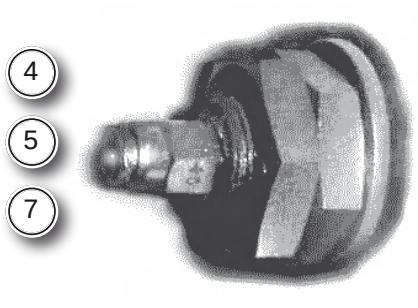
4. Loosen the relief valve by turning counter clockwise using gradual increments until the grease begins to be expelled. Care must be taken not to loosen the relief valve too quickly because the grease inside is under high pressure.

⚠ DANGER

Grease coming out of the relief valve under pressure can penetrate the body causing injury or death; DO NOT watch the relief valve to see if grease is escaping but instead watch the track adjustment cylinder to verify that the track is being loosened.

5. When the correct track tension has been measured, turn the relief valve clockwise to tighten and then clean away all trace of expelled grease.

6. If the track fails to slacken after the grease fitting has been loosened, do not attempt to remove the tracks or disassemble the track tension system, or remove the grease fitting. It is possible that running the tracks with the grease fitting loosened may help to expel the grease.



To Increase Track Tension [After measurement]:-

7. Connect the grease gun to the grease fitting and add grease until the track tension is within the specified dimension, see ‘Measuring Track Tension’ and refer to lubricant and fluid specifications.

42

Re-check Tension

8. Operate the plant in track mode and drive the plant 50 metres (50 yards) forwards and 50 metres (50 yards) backwards, check track tension and repeat the above steps if it is within the specified dimension, see ‘Measuring Track Tension’.

9. If room for manoeuvring the plant is restricted, drive the plant forwards and backwards several times over a shorter distance.

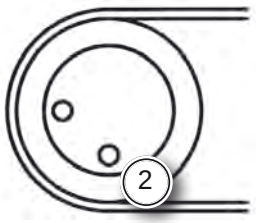
DO NOT SET TRACK TENSION TOO TIGHT.

Drive Oil Draining & Filling

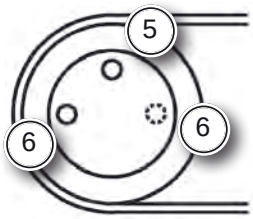
Alternative track motor drive and gearbox may be fitted. Refer to illustrations to identify if type A, B, C or D is fitted.

Type A

Refer to these instruction for servicing if the casing has two plugs and appears as shown.



1. Observe all safety warnings.
2. Rotate the gearbox housing until one of the plugs is at the lowest point.
3. Unscrew both plugs
4. Discharge the oil into a container for correct disposal.



5. To refill, rotate the gearbox housing so that one plug is at the top position and the other plug is as shown.
6. Fill through upper hole until the oil flows from lower hole. Use only the correct oil, refer to servicing - lubrication.

41

7. Clean plugs using a clean non-flammable solvent.
8. Apply thread sealant to the plugs and refit.
9. Repeat procedure on the other side.

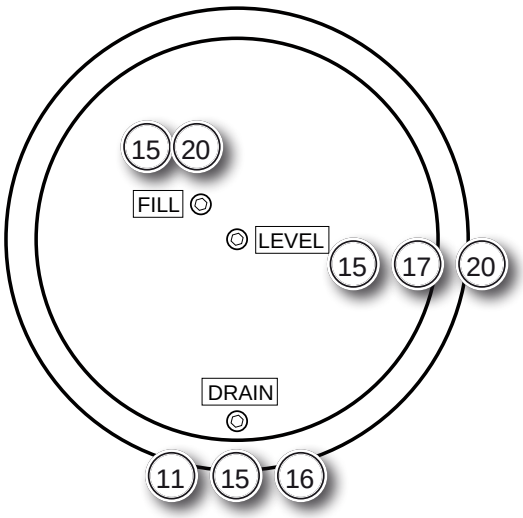
Note:- Over filling the final drive will cause the travel motor seal to allow hydraulic fluid or water to enter and contaminate the drive

Type B

For identification, the letter V has been added to the end of the track serial number.

Refer to these instruction for servicing if the casing has three plugs and appears as shown.

10. Observe all safety warnings.
11. Drive the track to position the motor and gearbox as shown with the drain positioned lowest.
12. The plant should be positioned horizontally side to side.
13. Close down the plant and implement the lockout procedure.
14. Place a suitable container in position to collect the old oil.
15. Remove the filling, level and drain plugs and drain the old oil, looking for metal particles indicating component wear.
16. Re-fit drain plug, taking care not to damage the seal.
17. Add new oil until it begins to overflow through the centre level hole.



18. Use only the correct oil, refer to servicing - lubrication.

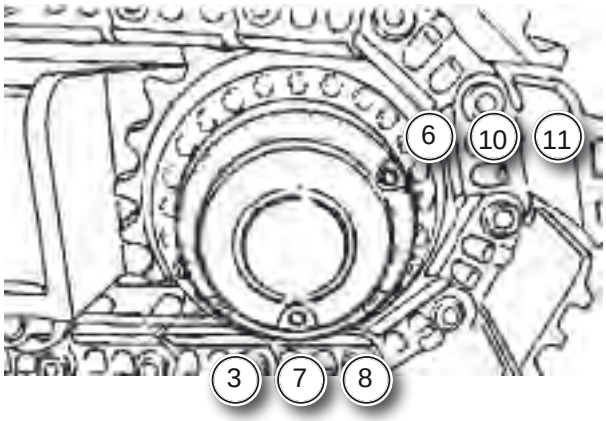
41

19. Do not mix different types or brands of oil.

20. Re-fit level and fill plugs, taking care not to damage the seals.

Type C and D

1. Refer to these instruction for servicing if the casing has two plugs and appears as shown.
2. Observe all safety warnings.
3. Drive the track to position the motor and gearbox with a plug at the lowest point for drainage.
4. The plant should be positioned horizontally side to side.
5. Place a suitable container in position to collect the old oil.
6. Remove the filling plug.
7. Remove the drain plug and drain the old oil, looking for metal particles indicating component wear.



8. Clean and re-fit the drain plug, taking care not to damage the seal.
9. Use only the correct type and quantity oil suitable for the type of gearbox and ambient temperature, refer to servicing - lubrication.
10. Add new oil until it is level with the filling hole.
11. Clean and re-fit level and fill plug, taking care not to damage the seal.
12. Repeat procedure on the other side.

41

48 EN Servicing Clutches

[Clutch Types A, B, C, D]

Engine Power Transmission

Types of Transmission fitted

Different types of clutch or coupling are used to suit the specific requirements for the model of plant [or option fitted]. The engine power take off to the crusher is through a clutch or fluid coupling mounted on the engine output shaft. These disconnect the crusher form the engine during the starting and stopping operation.

⚠ WARNING

Refer to Safety Notices Section for relevant warning and procedure

LOCKOUT PLANT

A - Hydraulic clutch with grease lubricated output shaft bearing.

B - Hydraulic clutch with oil lubricated output shaft bearing [Transfluid].

C - Manual clutch with grease lubricated output shaft bearing [Twindisc].

D - Fluid coupling [Transfluid].

A - Hydraulic Clutch - Grease Lubricated Bearing

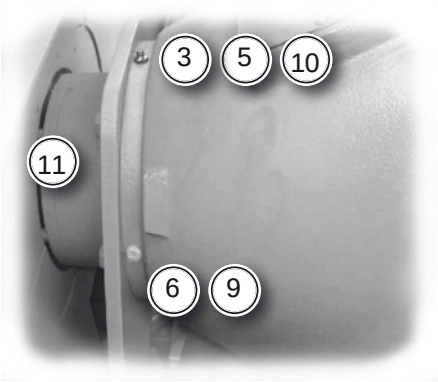
1. The output shaft is supported by a spherical roller bearing, grease lubricated, fitted in a cover flanged to the engine flywheel housing.

2. Refer to servicing - lubrication.

41

3. If necessary add recommended grease through the grease nipple, see lubricant and fluid specifications.

42



4. For the next maintenance cycle see servicing - lubrication.

41

NOTICE

Do not over grease the bearing carrier [12]. The main bearing may overheat and grease exit from the seals.

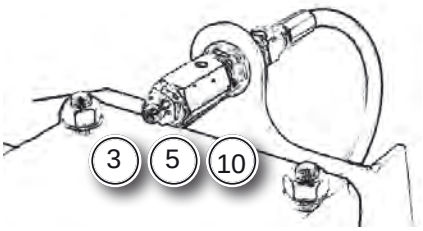
5. Add grease through the grease nipple at the recommended intervals, refer to servicing - lubrication.

41

6. Remove the overflow plug to ensure that it is not overfilled [Transfluid only].

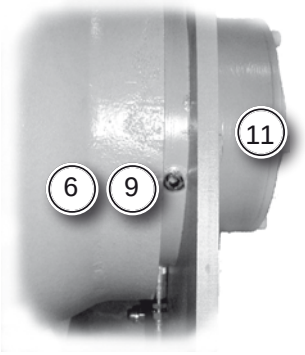
7. Check the clutch driving plates annually and it is advisable, every 3000 working hours, to check the condition of the bearings and replace the rotating seals.

8. Purge the old grease at the recommended intervals. The grease should also be replaced if the unit has not been used for more than 6 months.



9. Remove the overflow plug to ensure that it is not overfilled [Transfluid only].

10. Grease should then be added through the grease nipple.



11. Refill bearing carrier with correct amount and type of grease, refer to servicing - lubrication

41

12. After 100 hours of operation after purging, the grease level should be checked.

B - Hydraulic Clutch - Oil Lubricated Bearing [Transfluid]

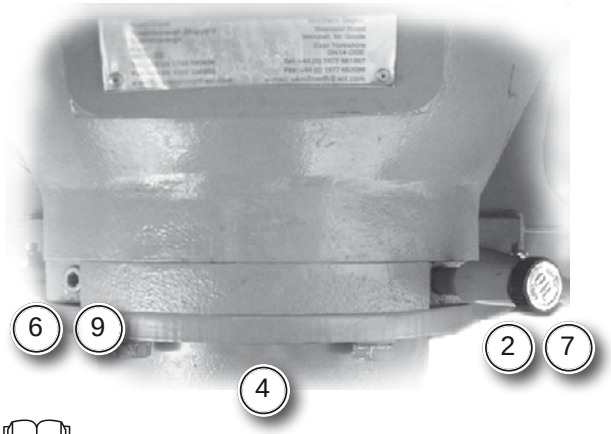
WARNING

Refer to Safety Notices Section for relevant warning and procedure

LOCKOUT PLANT

1. The output shaft is supported by a spherical roller

bearing, oil lubricated, fitted in a cover flanged to the engine flywheel housing.



2. Check the bearing oil level prior to the daily start up of the plant: as a minimum requirement, level stick must be oil wet.

3. Renew the oil at intervals shown in the plant lubrication schedule of servicing - lubrication.

41

4. Drain the old oil by opening the tap located at the bottom of the bearing housing. Make sure this is closed before adding fresh oil.

5. Check the clutch driving plates annually and it is advisable, every 3000 working hours, to check the condition of the bearings and replace the rotating seals.

6. Remove the plug.

7. Fill the bearing cavity through pipe with the correct oil, see lubricant and fluid specifications.

42

8. Turn the shaft until maximum oil level is indicated on the stick.

9. After filling refit the plug.

Hydraulic Clutch Operation [Types A and B]

Types A and B

10. The hydraulically operated clutch is a minimum maintenance unit.
11. The clutch is operative when the plant hydraulic system is at operating pressure. Should the hydraulic pressure fall below a preset level, a low pressure warning will be indicated and the feeder will stop. This prevents any further material entering the crusher whilst there is a risk of the clutch slipping due to low hydraulic fluid pressure. Establish the reason for the fall in pressure and contact your local Powerscreen® dealer to rectify.

 03

C - Manual Clutch [TwinDisc]

⚠ WARNING

Refer to Safety Notices Section for relevant warning and procedure

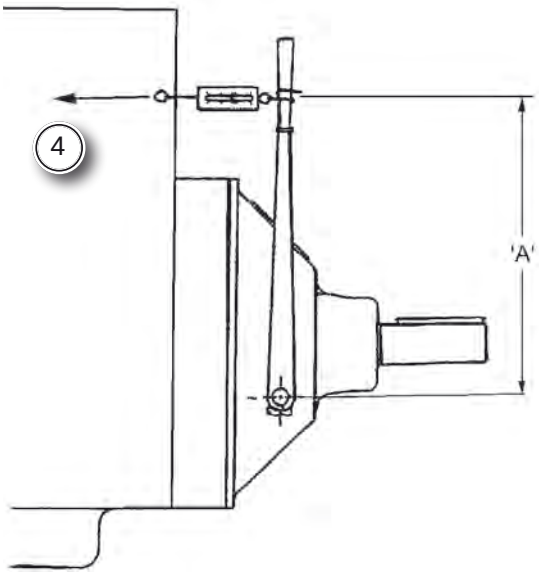
LOCKOUT PLANT

1. Refer to the clutch adjustment check to be made at the time of initial commissioning when new and the essential regular maintenance of the clutch thereafter.
2. New clutch plates have a ‘wear in’ period and the clutch may require several adjustments until new plates are ‘worn in’.
3. A manual clutch must have an adjustment check at the following intervals:-

- At commissioning.
- After 4 hours operation.
- After 10 hours operation.
- At the end of each working day for approximately 1 week.
- Once a week after ‘wear in’.

Clutch Adjustment Check

4. In order to determine if clutch adjustment is required, operating shaft torque should be measured as shown.
5. If this force is found to be at or below the 'MINIMUM' shown, the clutch should be adjusted until the 'MAXIMUM' force is required to engage he clutch.



USE SPRING SCALE AT HAND LEVER LENGTH 'A' SHOWN AND MEASURE THE PULL REQUIRED TO ENGAGE THE CLUTCH

NOTE: Do not adjust the clutch too tight as forces above 'MAXIMUM' can cause clutch component failure. Please contact your local Powerscreen® dealer or Powerscreen® Technical Support department.

03

Pegson 428 Trakpactor and Pegson 4242SR

IBF-314 clutch shaft torque 325 to 434Nm (240 to 320lbf ft) Pull of 61 to 82kgf (135 to 180lbf) at lever length 'A' of 541mm (21.3in)

6. Lubricate the output shaft at the grease nipple, refer to the plant lubrication schedule in servicing - lubrication.

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7. Grease the operating lever shaft.
8. Refer to information plate on clutch housing.

D - Fluid Coupling [Transfluid]

Description

1. The fluid coupling is a drain type coupling.. When the crusher stop is activated it electrically disconnects the fluid supply and thus allows the unit to drain. When ‘drained’ it disconnects the crusher from the engine.
2. When the crusher start is operated it electrically activates the fluid pump inside the coupling. As it is progressively filled it operates as a ‘soft’ engagement to drive the crusher.
3. In the course of normal operation the fluid coupling operates automatically and no action is required to the unit.
4. The coupling fluid is cooled through the engine cooling system with a preset maximum temperature level. The temperature is monitored and a high temperature fault will be indicated and automatically stop the feeder.
5. Fluid is cleaned by a replaceable filter. The filter blocked fault will be indicated when the filter cartridge must be changed immediately or the fluid flow will be unfiltered.

03

⚠ DANGER

THIS IS A HIGH PRESSURE SYSTEM.

Do not tamper with the unit. In the event of anything other than minor problems, these should only be dealt with by suitably experienced and qualified engineers. Please contact your local Powerscreen® dealer or Powerscreen® Technical Support department.

Servicing

⚠ WARNING

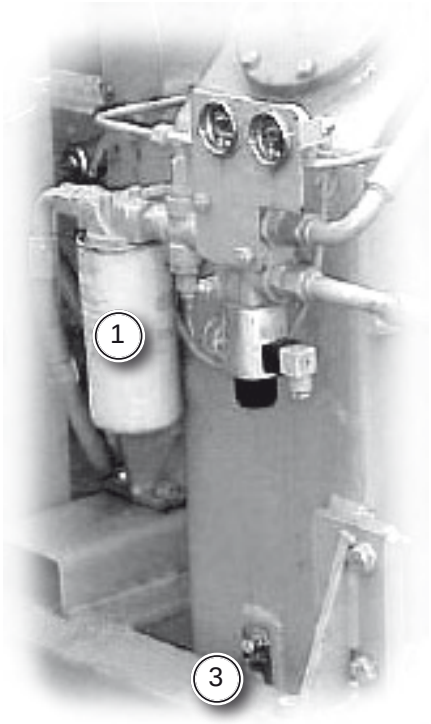
Refer to Safety Notices Section for relevant warning and procedure

LOCKOUT PLANT

⚠ WARNING

Before carrying out any servicing on the fluid coupling close down the plant and implement the lockout procedure.

1. Change the hydraulic fluid and the cartridge filter after the first 100 working hours. Only use a recommended fluid and filter.
2. Thereafter change the fluid at the recommended working hour intervals and change the oil filter cartridge when indicated.
3. Fill the unit to the correct level, the line on the indicator. Start the engine to run the pump to fully fill the heat exchanger. Then check the fluid level again with the engine stationary.
4. It is essential when replenishing hydraulic fluid, attending to filters, etc. to apply the greatest degree of cleanliness as it is most important that contaminants are not allowed to enter the system.



NOTICE

Do not make any modification without the approval of the manufacturer

Fault Finding

If you are unfamiliar with the fluid coupling, contact your local Powerscreen® dealer or Powerscreen® Technical Support department.

 03

NOTICE

The fluid coupling is a complex unit. Any rectification work should only be undertaken by a skilled engineer fully conversant with the coupling.

Unit fails to operate

1. Check the fluid level is up to the level line.
2. Check the fluid pressure is satisfactory.
3. Check if the temperature alarm has operated.

Unit operates at reduced output speed

4. Carry out the checks above.
5. Check engine high idle speed with fluid coupling disengaged.
6. Check that the crusher shaft turns freely.

Fluid Loss

7. Check all pipe connections.
8. Check seals for leakage.
9. Check engine flywheel housing.
10. Check for leakage into engine coolant.

11. If vapour comes from the breather, wait until the fluid temperature reaches more than 55ºC (130ºF). If fluid comes out of the breather, contact your local Powerscreen® dealer or Powerscreen® Technical Support department.

 03

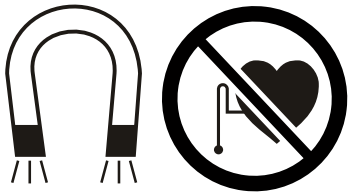
High fluid pressure

12. Check filter and replace if necessary.
13. Check the tubes are not obstructed.

49 EN Servicing Magnetic Separator

Magnetic Separator - General [if fitted]

The self cleaning suspended magnet utilises a two pulley design. The tail pulley has adjustment available to take up belt stretch and for tracking purposes.



⚠ WARNING

The belt magnet assembly is very powerful and permanently charged. The strong magnetic field produced could affect heart pacemakers, watches, credit cards, mobile phones etc. The operator has the sole responsibility to keep anyone at risk clear of the machine.

Persons with medical implants which may be affected by the magnetic field should keep a minimum of 3m (10ft) away

Inspection

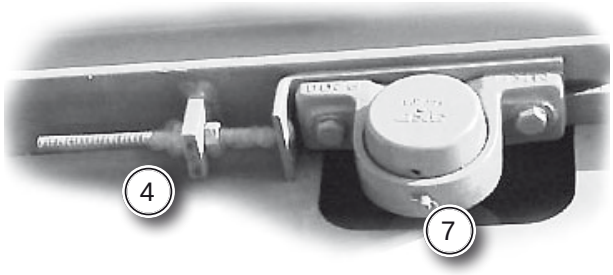
1. Be sure the magnet frame is visibly square and has not been damaged or twisted.
2. Check belt alignment.
3. Momentarily energise the belt drive and check that the belt is tracking properly and is not wandering laterally. Never start the belt and allow it to run continuously until the belt is properly “trained”. If the belt wanders, note the direction and adjust as follows:

⚠ DANGER

Refer to Safety Notices Section for relevant warning and procedure

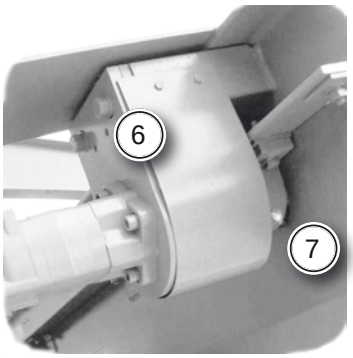
Servicing

4. Belt tracking should be checked frequently and adjusted as necessary. To track the belt, the tail pulley should be moved in a direction to tighten the belt on the side opposite to the direction in which the belt wanders. Tighten the side of the belt to which you want the belt to move.



5. When tracking or tensioning the belt take care not to over-tension as this will cause the shaft bearings to fail.

6. Regularly check the hydraulic motor mounting bolts for tightness and that both halves of the coupling between the motor and the drive shaft are in alignment.



7. Lubricate bearings consistent with schedule in servicing - lubrication using suitable grease.

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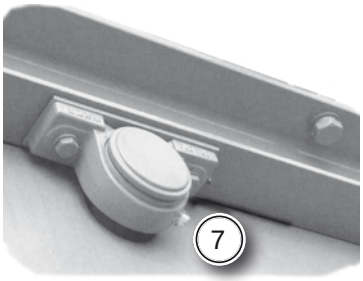


8. Refer to lubricant and fluid specifications.

42

⚠ DANGER

As many inspections as possible should be made whilst the belt is stationary. When this is not possible extreme care should be taken when inspecting the belt whilst it is moving as this creates an entanglement hazard and risk of trapping parts of the body.

50 EN Servicing Electrical System

General

1. The plant electrical equipment is a self contained 24V DC system operated via automotive batteries which are recharged when the engine is running.
2. Depending upon the model of plant and the equipment fitted, various types of control, monitoring, sequencing, electrical safeguards and fault detection devices are built into the system including a multi station emergency stop circuit.
3. Any work on the plant electrical system shall only be undertaken by a qualified electrician, familiar with this type of system.
4. Circuit protection fuses or circuit breakers fitted depend upon the plant model. The replacement of a protection device after failure must not exceed the rating of the original otherwise damage to components may occur and any warranty invalidated. A repeat of the failure must be investigated and the problem rectified by a competent person.
5. Always keep the electrical cabinets and control boxes closed during the crushing operation to prevent the ingress of dust and damp.
6. At regular intervals check the tightness of the electrical components on the plant and look for any damage to the electrical wiring.

⚠ DANGER

Emergency stop equipment and all other safety systems, including the audible warning siren, must be operative at all times whilst the plant is running or being manoeuvred.

The safety devices must be checked as fully operational at each daily start and must not have been tampered with or disabled in any way.

7. Refer to emergency stop section.

📖 16

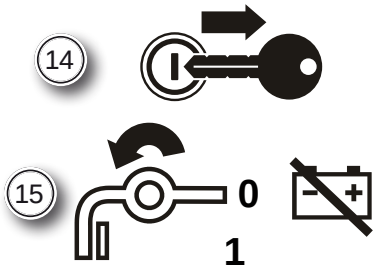
Battery Replacement

Safe Handling of Automotive Batteries

8. The plant contains 2 automotive type batteries which are replacable.
9. Battery Posts, terminals and related accessories contain lead and lead compounds.
10. Handle batteries carefully and keep them level as they contain sulphuric acid, an electrolyte which can cause severe burns and produce explosive gases.
11. Avoid contact with the skin, eyes or clothing.
12. Wash hands thoroughly after handling.

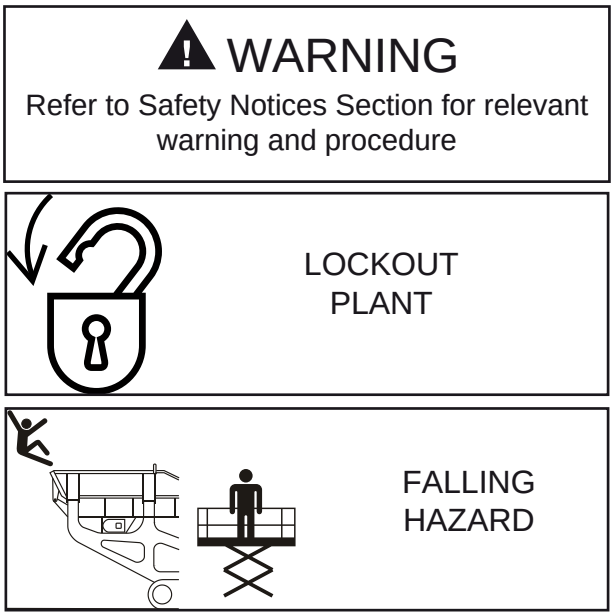
Automotive Battery Replacement

13. Batteries should only be replaced by a competent person.



14. Stop the plant and remove the ignition key.
15. Set the battery disconnect switch to ‘0’ and lockout.

16. Two batteries are used for the plant electrical system, located near or within the engine powerpack.
17. Remove fasteners and guard, cover or floor panel to gain access to the batteries.



18. On some plants it is necessary for a suitable working platform to be used.

19. The plant has a negative [-] chassis connection.
20. Disconnect the cable at the negative [-] battery terminal first.
21. Disconnect the positive [+] plant feed cable at the battery terminal.
22. Disconnect the battery linking cable.

23. Release the batteries from the securing clamps and remove batteries.
24. Replacement batteries must be of the same type and capacity as the original ones fitted.

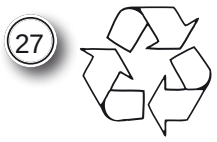
25. Contact your local Powerscreen® dealer or Powerscreen® technical support department for advice if in doubt.

 03

Battery Recycling

26. Do not dispose of any old batteries with normal waste that may to go to landfill.

27. All batteries shall be disposed of correctly to be recycled at an approved treatment facility.



51 EN Servicing Hydraulic System

General

⚠ DANGER

Refer to Safety Notices Section for relevant warning and procedure

SKIN INJECTION HAZARD

All hydraulic functions are powered by pumps driven by the engine.

Note:- All relief valve pressures are factory set and should not be adjusted.

The hydraulic fluid reservoir together with associated equipment must be maintained in accordance with the set level and in the schedules and types, refer to:

Daily plant checks 24

Lubrication - checks - specifications. 41 42

ONLY USE A RECOMMENDED FLUID.

⚠ DANGER

THIS IS A HIGH PRESSURE SYSTEM. Never carry out any maintenance work without ensuring the hydraulic system is locked out and depressurised. Check the pressure gauges and control screen, if fitted, to view the current system pressure. Open the bleed valve, if fitted, until all pressure is relieved then close the valve. Do not amend the hydraulic system. In the event of any problems these should only be dealt with by suitably experienced and qualified engineers.

Hydraulic Fluid Level

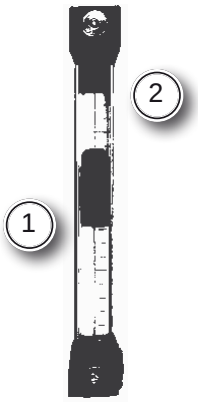
⚠ WARNING

Refer to Safety Notices Section for relevant warning and procedure

LOCKOUT PLANT

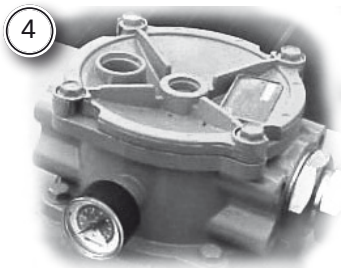
1. Check the fluid level on the gauge and top up as necessary.

2. Maximum approximately 40mm (1.5in) below upper mark.



3. It is essential when replenishing hydraulic fluid, attending to filters, etc. to apply the greatest degree of cleanliness as it is most important that contaminants are not allowed to enter the system.

4. If hydraulic fluid needs to be added to maintain the correct level, this should be poured in after removing the return filter cover but with the filter element left in place.



Suction Filter

⚠ DANGER

Refer to Safety Notices Section for relevant warning and procedure

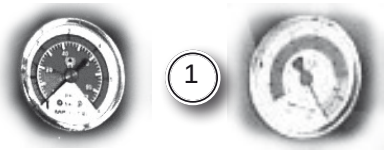
SKIN INJECTION HAZARD

⚠ WARNING

Refer to Safety Notices Section for relevant warning and procedure

LOCKOUT PLANT

1. Locate the hydraulic suction filter and gauge within the engine canopy.
2. Observe all safety warnings.
3. The filter housing has an internal shut off valve to permit the filter to be changed.
4. Close down the machine and implement the lockout procedure.
5. Make sure the oil has cooled before changing a filter.



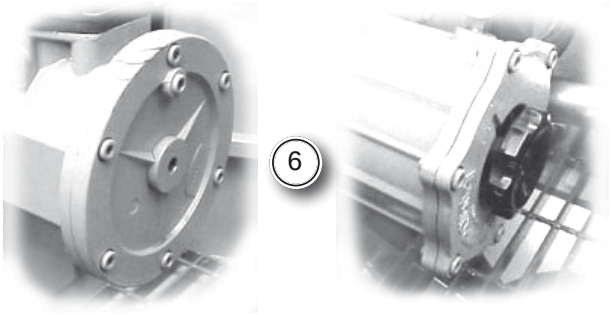
NOTICE

The hydraulic fluid filters have condition indicators to show when the filter element needs to be renewed.

When the gauge changes from green to red whilst the system is running at normal operating temperature the filter must be renewed.

In cold ambient temperatures the filter indicators may show an incorrect red condition until the system reaches normal operating temperature.

6. Depending on which type is fitted, unscrew the centre bolt or turn shut off valve in the centre of the filter housing until it reaches the stop.
7. Place container below filter to collect spillage of fluid.
8. Remove screws and the cover plate.
9. Remove filter and clean inside the housing and cover plate with lint free cloth.



NOTICE

It is important to ensure that the bolt or knob in the centre of the housing is fully screwed in before starting the plant, otherwise damage will occur to the plant.

10. Fit new filter of the approved pattern and specification.
11. Lightly smear the ‘O’ ring with fluid and make sure it is properly seated in the groove.
12. Replace the cover plate and screws evenly to ensure a good seal.
13. Depending on which type is fitted, fully screw in the centre bolt or shut off valve in the centre of the filter housing.

Return Filter

⚠ DANGER

Refer to Safety Notices Section for relevant warning and procedure

SKIN INJECTION HAZARD

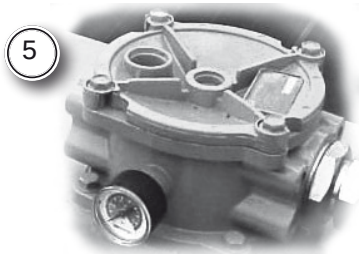
⚠ WARNING

Refer to Safety Notices Section for relevant warning and procedure

LOCKOUT PLANT

1. Locate the hydraulic return filter and gauge within the engine canopy.
2. Observe all safety warnings.
3. Close down the machine and implement the lockout procedure.
4. Make sure the fluid has cooled before changing a filter.

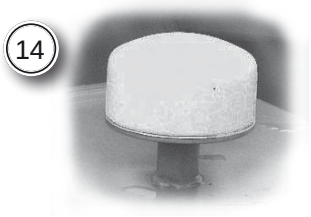
5. Remove the screws and remove the cover plate together with internal spring.
6. Remove the old filter and clean inside the housing and cover with lint free cloth.
7. Fitting new filter of the approved pattern and specification.
8. Replace the spring which holds the filter in place.
9. Lightly smear the ‘O’ ring with fluid and make sure it is properly seated in the groove.
10. Replace the cover plate and screws evenly to ensure a good seal.



Tank Breather

11. The breather is also a filter and should be changed after the first 100 hours of operating and thereafter after 1000 hours but in dusty atmosphere it is recommended to change more frequently depending upon conditions.
12. Observe all safety warnings.
13. Close down the machine and implement the lockout procedure.

14. Unscrew and renew the breather whilst the plant is shut down.
15. Clean breather cap every 200 hours.



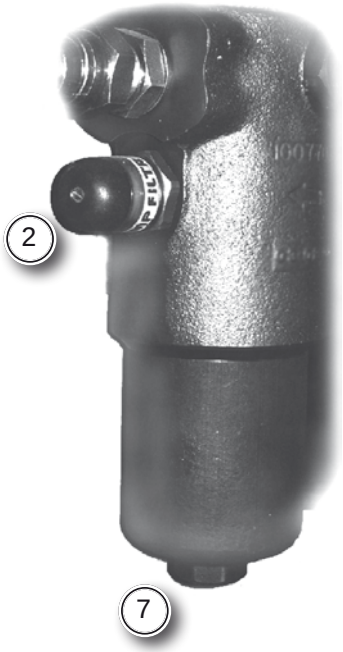
Pressure Filters [if fitted]

WARNING

Refer to Safety Notices Section for relevant warning and procedure

LOCKOUT PLANT

1. Locate the hydraulic pressure filters within the engine canopy. Not fitted to all systems.
2. Check the filter condition indicator.
3. Observe all safety warnings.
4. Close down the plant and implement the lockout procedure.
5. Make sure the fluid has cooled before changing filter.
6. Place container below filter to collect spillage of fluid.
7. Unscrew the filter bowl, turn anti-clockwise looking from below.
8. Remove the old filter and clean inside the bowl and housing with lint free cloth.
9. Fit new filter and small 'O' ring of the approved pattern and specification.
10. Lightly smear the 'O' ring with fluid and place on it's seating in the bowl making sure it is properly seated.
11. Replace and secure bowl to ensure a good seal, taking care as it has a fine thread.



60 EN Replacing Worn Jaws

Jaw Replacement

⚠ WARNING

Refer to Safety Notices Section for relevant warning and procedure.

LOCKOUT PLANT

1. Observe all safety warnings
2. Run the crusher until completely empty.
3. Close down the plant and implement the lockout procedure.

02

⚠ DANGER

Only use lifting equipment suitable for the work to be carried out.

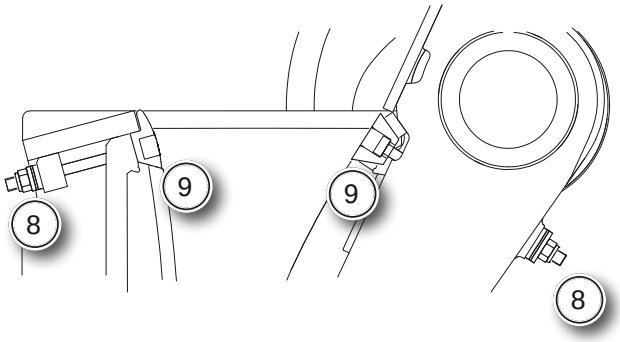
For fixed jaw only:

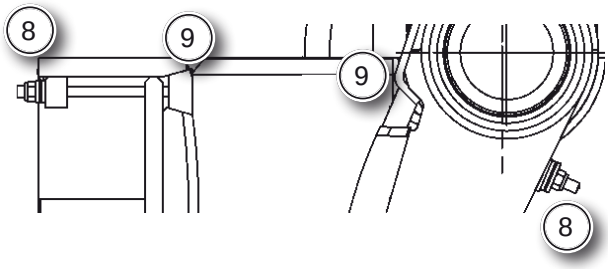
4. Remove any flexible or rigid covers or guards to gain access to the jaw securing nuts.
5. To gain access to the jaw securing nuts on some models, it is necessary to release and lower the dirt bypass chute.
6. Use lifting equipment to support the dirt bypass chute, then remove securing bolts on each side.
7. Raise and move the chute slightly forward, then lower the chute to rest on the plant chassis.

All jaws:

8. Remove the securing nuts, steel and ‘Fabreeka’ washers.

9. Remove the bolts and jaw clamping wedges.

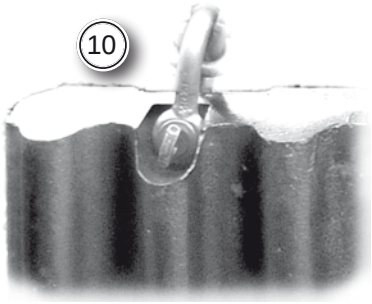




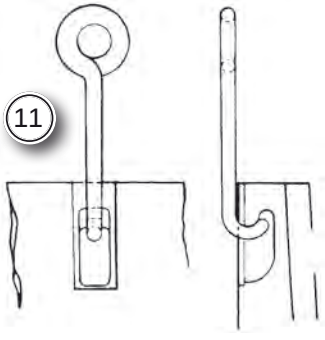
⚠ WARNING

As the fixed jaw is mounted vertically, secure it while removing the nuts, washers, bolts and wedges.

10. Tip the top of the jaw forward slightly and fit the lifting shackles to the jaw, inserting each shackle bolt from the front face of the jaw.



11. Note: Some jaws have a slot in the back as an alternative method of lifting.



⚠ DANGER

Take extreme care when moving the jaw forward. Wedge jaw securely in place prior to fitting the shackles into the jaw lifting points or using hooks.

12. Lift out the jaw and place it on blocks with the wearing side face down if it is only part worn and is to be re-fitted. Refer to component manual for weights.
13. Fit the lifting shackles or hooks into the lifting points at the other end of a jaw to be re-fitted or the replacement jaw, inserting each shackle bolt from the front face of the jaw.
14. Hoist the jaw into position and locate onto the centring key at the bottom of the jaw.
15. After locating the jaw in position, tip the top of the jaw forward slightly and wedge it securely in place, then remove the lifting shackles or hook.
16. Move jaw back into position and secure with the jaw wedges, bolts, washers, 'Fabreeka' washers and nuts - TIGHTEN SECURELY.

Fixed jaw only:

17. Re-fit any guards or covers removed to gain access.
18. If applicable, raise and locate the dirt bypass chute, using lifting equipment, on to the location mountings and secure with the bolts.

NOTICE

After fitting the jaws operate the crusher for 15 minutes. Stop the crusher and check the nut tightness. Continue to check the nuts before operation each day.